EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

OCTOBER 19-20, 2023

PARIS FRANCE

Hosting Organization:
Eurasia Conferences, 124 City Road, London, EC1V 2NX.

SCIENTIFIC PROGRAM

08:50- 09:00 @ **Introduction, Welcome note and Conference Inauguration**
Conference Room: "BRUXELLES"

DAY 1

October 19, 2023

Keynote Sessions

09:00-09:40
Title: The Benefits of High Temperature Computing
Dr. Jean-Marc Le Peuvédic, Commercial and Technical Director at CalCool Studios, France

09:40-10:20
Title: Unification of Thermodynamic Models for Non-Polar and Polar Mixtures
Karen Schou Pedersen, Kapexy Aps, Kgs. Lyngby, Denmark

Speaker Sessions

10:20- 10:40
Title: Confined Quantum Field Theory
Mohammad Fassihi, Confined Quantum Field Theory group, Sweden

10:40- 11:00
Title: Diverse Contributions to Mathematics and Physics: A Hidden Legacy
Christopher A. Kurz, Master of Science in Secondary Education, Rochester Institute of Technology, Rochester, New York, Untied States of America

Tea and Refreshments Break 11:00-11:30

11:30- 11:50
Title: Machine Learning Time-Local Generators for Reduced Dynamics Simulation in Quantum Many Body Systems
Tadjeugue Nangmo Junior Wilfried, Department of physics, condensed matter and nanomaterial's, University of Dschang, Dschang, Cameroon

11:50- 12:10
Title: Alice – Applying Bert to Italian Emails
Pasquale Restaino, Sogei S.p.A., Rome, Italy

12:10-12:30
Title: Come on Barbie, Let's Go Party: Using AI for Music Mixing
Ziv Levy, Data Science, Wix.com, Tel-Aviv, Israel

12:30-12:50
Title: Integrating Artificial Intelligence Models for Malware Detection Across a Cyber Security Platform
Ernest Smiley, Georgetown Analytics and Technology, 2800 Eisenhower Ave, Suite 220, Alexandria, Virginia 22314 USA

Session wrap

Lunch Break 13:00- 14:00

14:00-14:20
Title: Alice – Brand phishing detection with Machine Learning
Nadezda Demidova, Cybercrime Security Team, eBay, London, United Kingdom

14:20-14:40
Title: Document AI Pipeline for Data Extraction from Business Documents
Aleksandr Loginov, Iconicchain Oy, Helsinki, Finland

14:40-15:00
Title: The Game Theory of Software Decisions
Ziv Levy, Data Science, Wix.com, Tel-Aviv, Israel

Tea and Refreshments Break 15:00-15:30

15:30-15:50
Title: Integrating Artificial Intelligence Models Across Patient Care Platforms: Revolutionizing Healthcare Efficiency and Effectiveness
Ernest Smiley, Georgetown Analytics and Technology, 2800 Eisenhower Ave, Suite 220, Alexandria, Virginia 22314 USA

15:50-16:10	**Title: Network Behaviour Monitoring using Deep Learning Technique** **Prof. Dr. Mohd Nazri,** Cyber Security Department (PKSRID)/National Defence University of Malaysia, Kuala Lumpur, MALAYSIA

Poster session

Poster-1	**Title: Production of bioactive HAP coating doped methylcellulose by plasma electrolytic oxidation method** **Yael Roth,** Department of Chemical Engineering, Ariel University, Ariel, Israel
Poster-2	**Title: Investigation of the Growth Kinetics of Hydroxyapatite on CP-Ti and Ti65Zr Alloys Treated by Plasma Electrolytic Oxidation** **Elinor Zadkani-Nahum,** Department of Chemical Engineering, Ariel University, Ariel, Israel

Session wrap and Day-1 Closing

DAY 2

(Virtual Session via Zoom) October 20, 2023

Keynote Sessions

09:00-09:30	**Title: GLAD elaboration and structural characterization of nanostructured Janus W-Mo columns** **POTIN Valérie,** Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB), UMR 6303 CNRS Université Bourgogne Franche-Comté, Dijon, France
09:30-10:00	**Title: Nonstoichiometric strontium ferromolybdate - a new electrode material for solid oxide fuel cells** **Gunnar Suchaneck,** Institute of Solid-state electronics, TU Dresden, 01062 Dresden, Germany
10:00-10:30	**Title: Catalytic properties of materials containing molybdenum and vanadium metal centers** **Jana Pisk,** Department of Chemistry, Faculty of Science, University of Zagreb, Zagreb, Croatia
10:30-11:00	**Title: Catastrophe Theory for Dyadic Interactions: The Smooth Unfolding of Singularities in Economic Games** **Dr. Michael S. Harré School of Computer Science,** Faculty of Engineering, University of Sydney, Sydney, Australia

Tea and Refreshments Break 11:00-11:15

Speaker Sessions

11:15-11:35	**Title: Algebraic Machine Learning as an alternative to ML** **María del Socorro García Román,** Department of Mathematics, Statistics and Operations Research, University of La Laguna, San Cristóbal de La Laguna, Canary Islands, Spain
11:35-11:55	**Title: Mathematical difficulties encountered in the study of the relativistic dynamics of extended particles** **Georgeta Vaman,** Institute of Atomic Physics, P.O. Box Mg-6, Bucharest, Romania
11:55-12:15	**Title: A=80 Exotic Systems and Nuclear Structure** **Fatima BENRACHI,** LPMPS Laboratory, Frères Mentouri Constantine-1 University, Constantine ALGERIA
12:15-12:35	**Title: Ecofriendly Synthesis of Gold Nano particles And Its Application towards Colorimetric Detection of Zn2+ And Hg2+ Ions In Real Samples Analysis** **Manjushree Bhattacharyya,** Research scholar, Department of Chemistry,Vidyasagar University, Midnapore-721102,West Bengal, India

12:35-12:55	**Title: In situ denitrification of groundwater by the combination of nano-zero valent iron (nZVI) particles and organic matter: Methodology and results** **Damián Sánchez García,** Cetaqua Andalucía. C/ Severo Ochoa, 7, 29590, Málaga, Spain

Lunch Break 13:00- 14:00

14:00-14:20	**Title: Analysis and Detection of Deep Fake Images Using Deep Learning Techniques** **Mr. K. RaviKanth,** Assistant Professor, Department of CSE, IIIT- Rajiv Gandhi University of Knowledge Technology, Basar, Nirmal-504107, Telangana, India
14:20- 14:40	**Title: How Cybersecurity Can Leverage The Power Of Quantum Computing** **Lavanya Palani,** CyberSecurity, Centre for Development of Advanced Computing, Bangalore, Karnataka, India
14:40- 15:00	**Title: The Internet of Behaviours: Challenges and Opportunities** **Dr. Parikshit Narendra Mahalle,** Senior Member IEEE, Professional Member – Society for Data Science, Dean – Research and Development, Professor and Head, Department of Artificial Intelligence and Data Science, Vishwakarma Institute of Information Technology, Pune – 411048, India

Tea and Refreshments Break 15:00-15:10

15:10-15:30	**Title: Layered AI and 3D Molecular Docking Models in a Pipeline for Drug Screening of Billions of Compounds for Drug Leads** **Ruben Abagyan,** San Diego Supercomputer Center, Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California San Diego, California
15:30- 15:50	**Title: What is going on in AI...? Highlights from the 2023 AI Index Report** **Nestor Maslej ,** Research Manager and AI Index Editor-in-Chief; Stanford Institute for Human-Centered AI, United States
15:50- 16:10	**Title: A Classification Model for Improving Student Academic Performance** **Jiangping Wang,** Department of Computer and Information Sciences, Webster University, St Louis, MO, USA
16:10- 16:30	**Title: Bringing Generative AI Models from Research to Production: An Industrial Challenge** **Surabhi Sinha,** Machine Learning Engineer Adobe, San Jose, California, USA
16:30- 16:50	**Title: How AI will transform eGov and Smart Cities** **Paulo H. Leocadio,** Independent Researcher, Coral Springs, FL, USA
16:50- 17:10	**Title: Enhanced Entrance and Exit Detection in Dynamic Environments using Object Detection and Linear Regression** **Murad Badarna,** Department of Information Systems, The Max Stern Yezreel Valley Academic College Israel

Poster session @ 17:10-17:30

Poster-1	**Title: Development of Nanostructured Lipid Carriers Loaded with Voriconazol for the Treatment of Topical Candidiasis** **Iris Usach Pérez,** Department of Pharmacy and Pharmaceutical Technology and Parasitology, Faculty of Pharmacy, University of Valencia, Burjassot, Valencia, Spain
Poster-2	**Title: AI-Powered Safety: Swift Anomaly Detection in Crowded Spaces** **Reem Saud Orfali,** General Education Program, Dar Alhekma University/Jeddah, Saudi Arabia
Poster-3	**Title: Two-Dimensional Tin Selenide nanosheets by simple solution chemistry for pseudocapacitive three-electrode studies** **Chandradip D. Jadhav,** Department of Physics, Faculty of Natural Sciences, Ariel University, Ariel, Israel

Session wrap and Day-2 Closing

EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

October 19-20, 2023 | Paris, France

KEYNOTE PRESENTATIONS | DAY 1

Jean-Marc Le Peuvédic
Commercial and Technical Director at CalCool Studios, France

The Benefits of High Temperature Computing

In today's fast-paced technological landscape, the need for efficient and reliable computing systems has never been greater. CalCool Studios is pioneering a revolutionary approach to this challenge through high-temperature computing, leveraging liquid cooling systems to maintain a consistently high but stable operating temperature.

Our research reveals that circuit reliability is significantly improved when a constant temperature is maintained. This not only enhances system performance but also opens up new avenues for energy recovery. A stable temperature ensures consistent heat quality, making it possible to repurpose this waste heat for domestic hot water or even building heating during winter months, given sufficient thermal storage capabilities.

This presentation will delve into the advantages and drawbacks of high-temperature computing, providing empirical evidence to support the benefits of this innovative approach. We will also explore the potential for large-scale energy recovery, turning what was once considered waste into a valuable resource.

Karen Schou Pedersen
Kapexy Aps, Kgs. Lyngby, Denmark

Unification of Thermodynamic Models for Non-Polar and Polar Mixtures

Until the late 1980s, the thermodynamic models used in the chemical industry and the oil industry for simulation of gas–liquid phase equilibria were of different kinds. The chemical industry used GE (or activity coefficient) models for the liquid phase, usually combined with an ideal gas assumption. GE models are well suited for representing low pressure phase equilibria of mixtures of polar components, but the oil industry requires high pressure calculations. Access to computers, enhanced compositional analyses, and the development of efficient phase equilibrium algorithms enabled the oil industry in the early 1980s to introduce cubic equations as an efficient tool to represent phase equilibria of mixtures of essentially non-polar hydrocarbon components at the high-pressure conditions found in subsea gas and oil reservoirs. Soon followed the need to also represent polar components, including water, glycols, and alcohols using an equation of state. This led to the development of modifications of cubic equations that had the ability to also handle non-ideal mixtures with polar components. The Huron-Vidal local composition model and the Cubic Plus Association model are examples of models that combine the capabilities of the GE models and the classical cubic equations of state. Such models have served to close the gap between the thermodynamic models applied in industry for polar and non-polar systems. Since then, non-cubic equations of state, as for example the PC-SAFT equation, have been developed for specific purposes where the cubic equations are insufficient.

Biography:

Karen Schou Pedersen has a PhD in liquid physics from the Technical University of Denmark. She has held positions as a research associate at the University of Edinburgh and the nuclear research center Institut Laue-Langevin, Grenoble, France. In 1982 she founded Calsep A/S and was until 2022 responsible for projects within reservoir fluid modeling and flow assurance. She is the author of more than 60 publications and 3 books on the phase behavior of oil and gas mixtures. Her current position is senior principal consultant and managing director of Kapexy Aps, a company specializing in reservoir fluid modeling.

EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

October 19-20, 2023 | Paris, France

SPEAKER PRESENTATIONS | DAY 1

Confined Quantum Field Theory

Mohammad Fassihi
Confined Quantum Field Theory group

Confined Quantum Field Theory is the extension of the moral of the special and general relativity into the quantum domain. Since it is a much stronger theory, it brings us much deeper into the quantum domain. It answers many fundamental questions in physics. Here we give some examples.

Disorder to order transition which is the base of the superconductivity and superfluidity. It gives a well defined size and position to the quantum objects, consequently removes a lot of puzzles, ambiguity and paradox in connection with the Entanglement. In the domain of quantum computing, it gives a transparent picture of the electrons dynamic and is a great help for constructing a more effective computer. In the question of the unification it gives a clear picture of the algebraic unification and analytic unification and establishes a more universal unification as a base for the physics. It even gives answers to the question of the existence of anti-gravity.

Biography:

Mohammad Fassihi was born in Iran, 1946. Is both novelist and theoretical physicist. In mathematics has a research in partial differential equations. In experimental physics has research in the catalytic process. In theoretical physics has published two books, first and second edition of the Confined Quantum Field Theory.

Diverse Contributions to Mathematics and Physics: A Hidden Legacy

Christopher A. Kurz
Master of Science in Secondary Education, Rochester Institute of Technology, Rochester, New York, Untied States of America

This presentation highlights the invaluable contributions made by the deaf community to the realms of mathematics and physics, showcasing the significance of diverse perspectives in advancing these disciplines. Despite facing communication challenges, deaf individuals have consistently defied societal expectations, creating groundbreaking discoveries that have redefined scientific paradigms.

In mathematics, deaf individuals have enriched the field through groundbreaking theories and applications. One prominent example is the 18th-century French mathematician Pierre de Fermat, whose revolutionary work in number theory laid the foundation for modern mathematics. More contemporary contributions include the works of Peter Haas, a deaf mathematician who made pivotal advancements in algebraic geometry, and YevgeniyMilman, who has revolutionized the field of functional analysis.

Likewise, in physics, the deaf have left an indelible mark through their innovative ideas and research. Notably, the 20th-century physicist and mathematician Wolfgang Pauli, who formulated the Pauli exclusion principle, a cornerstone of quantum mechanics. Additionally, Annie Jump Cannon, a deaf astronomer, played a pivotal role in developing the stellar classification system, revolutionizing our understanding of stars.

These exemplary contributions emphasize the value of diverse perspectives in these scientific disciplines. The unique experiences and insights of the deaf individuals have resulted in groundbreaking discoveries that have transcended linguistic barriers. Embracing diversity and inclusion in mathematics and physics not only enriches the fields but also propels scientific advancement in previously unimagined directions. By recognizing and celebrating those contributions, we foster an environment that encourages and nurtures diverse talents, ensuring a vibrant and thriving scientific landscape for the future.

References:

Chris Kurz, PhD, is a Professor and Director of the Mathematics and Science Language and Learning Lab at Rochester Institute of Technology, USA. With academic backgrounds in mathematics and physics, his research areas include language and literacy in STEM (Science, Technology, Engineering, and Mathematics), data visualization, and Deaf experience in STEM. He earned his PhD in Foundations from University of Kansas and a BS degree in Applied Mathematics from Rochester Institute of Technology. He has taught mathematics, physics, and methods in STEM to high school and university students in the past 20 years.

Machine Learning Time-Local Generators for Reduced Dynamics Simulation in Quantum Many Body Systems

Tadjeugue Nangmo J. W[1] and Tchoffo Martin[2]

[1]Department of physics, condensed matter and nanomaterial's, University of Dschang, Dschang, Cameroon

In recent years, the scientific community has developed a growing interest in studying the non-equilibrium effects that emerge in complex quantum many-body systems. This is typically the case when we are interested in the evolution of a set of local degrees of freedom considered as an open subsystem in many-body quantum systems. Its evolution can be governed by master equations that govern the dynamics of open systems and whose formulation is based on a set of assumptions, mainly Redfield, Born and Markov. Machine learning algorithms, by learning from data, can describe the dynamic of quantum systems. In this work, our aim is to see to what extent artificial neural network are capable of describing and predicting open quantum dynamics. Our physical model consists of a set of many-body spin configurations. We collect the data set from numerical simulations using the Quantum Toolbox in Python library. The multilayer perceptron is capable of learning and accurately predicting the time-independent generators, corresponding to an effectively Markovian dynamics. When the dynamics become non-Markovian, we build a long short term memory neural network that takes memory effects into account and learns time-local time dependent generators. These methods offer advantages such as computational acceleration, scalability, accuracy and flexibility. They are also important in situations where we need to know to what extent the dynamics of the reduced system can be effectively Markovian, and in situations where experiments and numerical simulations are unable to capture the long-term dynamics.

Biography:

Antoine Browaeys and Thierry Lahaye. Many-body physics with individually controlled Rydberg atoms. Nature Physics, 16(2) :132–142, 2020

Jens Eisert, Mathis Friesdorf, and Christian Gogolin. Quantum many-body systems out of equilibrium. Nature Physics, 11(2) :124–130, 2015

Hal Tasaki. Physics and mathematics of quantum many-body systems, volume 66. Springer, 2020

MA Cazalilla and M Rigol. Focus on dynamics and thermalization in isolated quantum manybody systems. New Journal of Physics, 12(5) :055006, 2010

Adam M Kaufman, M Eric Tai, Alexander Lukin, Matthew Rispoli, Robert Schittko, Philipp M Preiss, and Markus Greiner. Quantum thermalization through entanglement in an isolated manybody system. Science, 353(6301) :794–800, 2016.

Marko Žnidaric. Relaxation times of dissipative many-body quantum systems. ˇ Physical Review E, 92(4) :042143, 2015

Raymond Kapral. Quantum dynamics in open quantum-classical systems. Journal of Physics : Condensed Matter, 27(7) :073201, 2015.

Alexandre M Zagoskin. Quantum engineering : theory and design of quantum coherent structures. Cambridge University Press, 2011.

Andrey R Kolovsky. Quantum entanglement and the born-markov approximation for an open quantum system. Physical Review E, 101(6) :062116, 2020.

Batta Mahesh. Machine learning algorithms-a review. International Journal of Science and Research (IJSR).[Internet], 9(1) :381–386, 2020.

Amanpreet Singh, Narina Thakur, and Aakanksha Sharma. A review of supervised machine learning algorithms. In 2016 3rd international conference on computing for sustainable global development (INDIACom), pages 1310–1315. Ieee, 2016.

B Ravi Kiran, Dilip Mathew Thomas, and Ranjith Parakkal. An overview of deep learning based methods for unsupervised and semi-supervised anomaly detection in videos. Journal of Imaging, 4(2) :36, 2018.

Walter H Delashmit, Michael T Manry, et al. Recent developments in multilayer perceptron neural networks. In Proceedings of the seventh annual memphis area engineering and science conference, MAESC, pages 1–15, 2005.

Hojjat Salehinejad, Sharan Sankar, Joseph Barfett, Errol Colak, and Shahrokh Valaee. Recent advances in recurrent neural networks. arXiv preprint

arXiv :1801.01078, 2017.

Subhashish Banerjee, Subhashish Banerjee, and Ahmad. Open quantum systems. Springer, 2018.

Jiaxuan Wang, Luiz Davidovich, and Girish Saran Agarwal. Quantum sensing of open systems : Estimation of damping constants and temperature. Physical Review Research, 2(3) :033389, 2020.

Guoliang Zhang, Dongmei Zhang, Ruonan Yang, Yong Du, Ning Wang, Zhanhu Guo, Xianmin Mai, and Feng Dang. A multifunctional wood-derived separator towards the problems of semiopen system in lithium-oxygen batteries. Advanced Functional Materials, page 2304981, 2023.

Andrei Y Khrennikov. Open Quantum Systems in Biology, Cognitive and Social Sciences. Springer Nature, 2023.

Diogo O Soares-Pinto. Quantum information science : From foundations to new technologies. Physica B : Condensed Matter, 653 :414510, 2023.

Asghar Ullah, M Tahir Naseem, and Özgür E Müstecaplıoglu. Preparation of thermal coherent ˘ environments for quantum coherence protection. arXiv preprint arXiv :2306.04369, 2023.

Marko Znidaric. Two-step relaxation in local many-body floquet systems. arXiv preprint arXiv :2301.06395, 2023.

Ching-Chi Hang and Liang-Yan Hsu. Many-body coherence in quantum transport. arXiv preprint arXiv :2304.11151, 2023.

Daoyi Dong and Ian R Petersen. Introduction to quantum mechanics and quantum control. In Learning and Robust Control in Quantum Technology, pages 7–33. Springer, 2023.

Hermann Grabert, Peter Hänggi, and Peter Talkner. Is quantum mechanics equivalent to a classical stochastic process ? Physical Review A, 19(6) :2440, 1979.

Markus Hasenöhrl and Matthias C Caro. On the generators of quantum dynamical semigroups with invariant subalgebras. Open Systems & Information Dynamics, 30(01) :2350001, 2023.

Wojciech Tarnowski, Dariusz Chrusci ´ nski, Sergey Denisov, and Karol ´ Zyczkowski. Random ˙ lindblad operators obeying detailed balance. arXiv preprint arXiv :2304.02960, 2023.

K Berrada, A Sabik, and H Eleuch. Quantum coherence and nonlocality of two qubits in the presence of a common dephasing environment. Results in Physics, page 106666, 2023.

Abolghasem Daeichian and Mehdi Mirzaee. Asymmetric markovian control of quantum entanglement. Physica Scripta, 98(3) :035014, 2023.

Xin-Yu Chen, Na-Na Zhang, Wan-Ting He, Xiang-Yu Kong, Ming-Jie Tao, Fu-Guo Deng, Qing Ai, and Gui-Lu Long. Global correlation and local information flows in controllable nonmarkovian open quantum dynamics. npj Quantum Information, 8(1) :22, 2022.

Alessio Recati and Sandro Stringari. Coherently coupled mixtures of ultracold atomic gases. Annual Review of Condensed Matter Physics, 13 :407–432, 2022.

Christian Käding and Mario Pitschmann. New method for directly computing reduced density matrices. Physical Review D, 107(1) :016005, 2023.

Oded Hod and Leeor Kronik. The driven liouville von neumann approach to electron dynamics in open quantum systems. Israel journal of chemistry, page e202300058, 2023

Francesco Campaioli, Jared H Cole, and Harini Hapuarachchi. A tutorial on quantum master equations : Tips and tricks for quantum optics, quantum computing and beyond. arXiv preprint arXiv :2303.16449, 2023.

Vasily E Tarasov. General non-local electrodynamics : Equations and non-local effects. Annals of Physics, 445 :169082, 2022

Dave Bacon, Andrew M Childs, Isaac L Chuang, Julia Kempe, Debbie W Leung, and Xinlan Zhou. Universal simulation of markovian quantum dynamics. Physical Review A, 64(6) :062302, 2001.

Lyran Kidon, Haobin Wang, Michael Thoss, and Eran Rabani. On the memory kernel and the reduced system propagator. The Journal of chemical physics, 149(10), 2018.

Dariusz Chrusci ´ nski and Andrzej Kossakowski. Non-markovian quantum dynamics : local versus ´ nonlocal. Physical review letters, 104(7) :070406, 2010

Bi-Heng Liu, Li Li, Yun-Feng Huang, Chuan-Feng Li, Guang-Can Guo, Elsi-Mari Laine, HeinzPeter Breuer, and Jyrki Piilo. Experimental control of the transition from markovian to nonmarkovian dynamics of open quantum systems. Nature Physics, 7(12) :931–934, 2011.

J Robert Johansson, Paul D Nation, and Franco Nori. Qutip : An open-source python framework for the dynamics of open quantum systems. Computer Physics Communications, 183(8) :1760– 1772, 2012.

K Jacobs and Luciano Silvestri. Thermalization of an open quantum system via full diagonalization. In Nano-Optics for Enhancing Light-Matter Interactions on a Molecular Scale : Plasmonics, Photonic Materials and Sub-Wavelength Resolution, pages 381–381. Springer, 2013.

Dariusz Chrusci ´ nski. Time inhomogeneous quantum dynamical maps. ´ Scientific Reports, 12(1) :21223, 2022.

Giuseppe Carleo and Matthias Troyer. Solving the quantum many-body problem with artificial neural networks. Science, 355(6325) :602–606, 2017

Yusuke Nomura, Andrew S Darmawan, Youhei Yamaji, and Masatoshi Imada. Restricted boltzmann machine learning for solving strongly correlated quantum systems. Physical Review B, 96(20) :205152, 2017.

Tomi Ohtsuki and Tomohiro Mano. Drawing phase diagrams of random quantum systems by deep learning the wave functions. Journal of the Physical Society of Japan, 89(2) :022001, 2020.

Zhijian Liu, Haotian Tang, Alexander Amini, Xinyu Yang, Huizi Mao, Daniela L Rus, and Song Han. Bevfusion : Multi-task multi-sensor fusion with unified bird's-eye view representation. In 2023 IEEE International Conference on Robotics and Automation (ICRA), pages 2774–2781. IEEE, 2023.

Keisuke Fujii and Kohei Nakajima. Harnessing disordered-ensemble quantum dynamics for machine learning. Physical Review Applied, 8(2) :024030, 2017.

Sayantan Bandyopadhyay, Zhongkai Huang, Kewei Sun, and Yang Zhao. Applications of neural networks to the simulation of dynamics of open quantum systems. Chemical Physics, 515 :272– 278, 2018.

IA Luchnikov, SV Vintskevich, DA Grigoriev, and SN Filippov. Machine learning non-markovian quantum dynamics. Physical review letters, 124(14) :140502, 2020.

Kunni Lin, Jiawei Peng, Feng Long Gu, and Zhenggang Lan. Simulation of open quantum dynamics with bootstrap-based long short-term memory recurrent neural network. The Journal of Physical Chemistry Letters, 12(41) :10225–10234, 2021.

Paolo P Mazza, Dominik Zietlow, Federico Carollo, Sabine Andergassen, Georg Martius, and Igor Lesanovsky. Machine learning time-local generators of open quantum dynamics. Physical Review Research, 3(2) :023084, 2021.

Immanuel Bloch, Jean Dalibard, and Sylvain Nascimbene. Quantum simulations with ultracold quantum gases. Nature Physics, 8(4) :267–276, 2012.

ALICE – APPLYING BERT TO ITALIAN EMAILS

Pasquale Restaino[1] and Liliana Saracino[2]
[1]Sogei S.p.A., Rome, Italy,
[2]Sogei S.p.A., Rome, Italy.

ALICE is an Artificial Intelligence solution that allows the automatic classification of email-type documents based on their information content, analyzed almost in real-time. The emails are written in Italian language. The classification classes are equal to 591, and in the use of the service, they will be able to grow further. The aim of this paper is to explores the implementation of the BERT model in the ALICE email classification system for multiclass classification in the Italian language. The main objective of the ALICE solution is the automation of classification processes performed manually by dedicated operators.

To improve the performance of the BERT model and to allow the addition of further classification classes, a transfer learning process has been envisaged.

The ALICE service, which uses the BERT model trained on the provided dataset, presently has a 76% accuracy.

Biography:

I am a Software Engineer who loves to design and implement Artificial Intelligence solutions to innovate and support business processes and Public Administration customers.

Professional capable of team working and being pro-active, always looking for the best solution.

For my professional frowth my two mottos are: study and "step-by-step".

Come on Barbie, Let's Go Party: Using AI for Music Mixing

Ziv Levy
Data Science, Wix.com, Tel-Aviv, Israel

As a DJ, I use many techniques to mix and create new sounds that get peoples' hands in the air. In this talk I'll describe AI algorithms based on Neural Networks which have the ability to break down music into elements. I'll cover how our brain differentiate between dozens of different sound signals when we listen to music. Can we instruct AI to do so? The cool part: live DJing on stage using AI algorithms.

Biography:

I've been a DJ since I was 15. Recently, I've started to use more and more AI algorithms to help me mix better and to be honest - work much less hard as a DJ on stage, and be much more creative at my home studio.

I'm currently working at Wix.com as a software engineer in the very exciting Wix's Data Science group. I'm an open-source enthusiast, have a fetish for web performance, love technology at its best when it's visual, and… mixing techno sounds at night!!

Integrating Artificial Intelligence Models for Malware Detection Across a Cyber Security Platform

Ernest Smiley
Georgetown Analytics and Technology, 2800 Eisenhower Ave, Suite 220, Alexandria, Virginia 22314 USA

In this ever-evolving digital age, malware attacks continue to grow in complexity and volume, putting businesses, governments, and individuals at increased risk. Current traditional security solutions can no longer efficiently cope with the detection and analysis of these threats due to their reactive nature and inability to scale to the necessary speed and size.

Our approach relies on creating a collaborative system of AI models, each trained to specialize in different aspects of malware detection. The talk will detail how integrating these models supports the detection and prevention of zero-day attacks, targeted attacks, and Advanced Persistent Threats (APTs).

We will further showcase how incorporating AI can help businesses predict, detect, and respond to cyber threats more rapidly and accurately, leveraging real-world data and case studies. Topics include AI-based threat anticipation, feature extraction from executable files, anomaly detection, and AI-driven decision-making processes in incident response.

Our approach not only allows for the faster detection of malware but also aids in its classification, helping security teams prioritize responses and mitigate threats more effectively. This comprehensive, AI-powered solution delivers higher detection rates, reduced false positives, and adaptable learning to the evolving threat landscape, thus fostering a more robust, predictive cybersecurity posture.

Biography:

Ernest Smiley is the Founder and CEO of Georgetown Analytics, which focuses on data science, artificial intelligence, and predictive analytics platform, supporting geospatial, investments, cyber, talent management, and healthcare ecosystem opportunities throughout the United States. He also serves as Chief Data Scientist for Kingdom Capital as Chief Data Scientist (CDS) and Chief Information Security Officer (CISO) of Kingdom Capital. Ernest focuses on data science, machine learning, artificial intelligence, and predictive analysis within the cyber/information security, human capital management, and healthcare ecosystem. Ernest oversees data scientists who analyze statistical data, ensure data quality, and develop tracking and reporting systems to determine the effectiveness of models, rules, and other risk initiatives and programs. He leads the entire Information Security program for Kingdom Capital. Lead the strategy, planning, and implementation of cyber security and innovations seamlessly connecting all organization components, facilitating high-quality customer care through an efficient experience. He is the former Chief Data Scientist for National Geospatial-Intelligence Agency (NGA) in Washington, DC. He also served as Chief Technology Officer (Source), Chief Human Geography, Chief, Applications and Systems, Chief Systems Integrator (Geospatial), and Chief Cybersecurity. Ernest holds the following certifications: Certified Data Privacy Solutions Engineer (CDPSE), Certified in the Governance of Enterprise IT (CGEIT), Certified Software Analyst (CSA), Certified Information Security Manager (CISM), Certified in Risk and Information Systems Control (CRISC), Certified Project Manager (CPM), Certified Forensic Consultant (CFC), Certified Leadership Consultant (CLC), and Certified Internal Controls Auditor (CICA). Ernest holds a Master's Degree in Technology Management from Georgetown University, a Master of Business Administration (MBA) in Finance and Accounting, and a Bachelor of Science from the University of Maryland. He has a Master's in Information Technology Project Management from Carnegie Mellon University. He also holds a Graduate Certificate in Data Science from Georgetown University. He has completed several executive leadership programs at Harvard, Carnegie Mellon, and the Massachusetts Institute of Technology (MIT). Ernest was inducted into the Black Engineering – Hall of Fame in 2023. Also, Ernest was the 2017 Scientist of the Year.


Brand phishing detection with Machine Learning

Nadezda Demidova[1] and Marc Green[2]
[1]Cybercrime Security Team, eBay, London, United Kingdom
[2]Cybercrime Security Team, eBay, Belfast,United Kingdom

Phishing and online scam sites are on the rise, and the sophistication of these attacks continues to develop. Phishing websites exploit the target brand's identity, using its logo, website design, and reputation to trick customers into divulging sensitive information like login credentials and financial details. This, in turn, can cause financial losses, identity theft, and harm to the brand's reputation. According to the Anti-Phishing Working Group, the number of reported phishing attacks has grown more than five-fold in the last three years*. This forces businesses into a highly reactive, defensive mode, unable to get ahead of the problem, while exposing customers and brand to abuse and financial loss.

While many techniques for combating phishing attempt to address the issue broadly, our approach is focused specifically on brand protection no matter how a phishing website was distributed to potential victims. We use a combination of features that provide agility and adaptability, allowing us to more precisely detect a wider variety of brand-related phishing websites.

This presentation will share our experience in applying Machine Learning techniques to combat phishing and scam threats targeting our brand off-platform. We will show our methods to compose a representative dataset and discuss the challenges of collecting clean samples.

The presentation includes an informative overview of our approach which combines features based on URL structure and wording, DOM structure, HTML and text content. These features enable ML-models to capture semantics and create a comprehensive high accuracy model capable of detecting phishing websites across multiple languages.

Biography:

Nadezda Demidova. Nadezda leads the Off Platform Brand Protection research at eBay. Previously holding analytic leadership positions for the anti-phishing team at Kaspersky Labs and the Payment Services anti-fraud at Yandex. Obtained an MSc in Data Science with distinction from Queen's University Belfast.

Marc Green. Marc currently leads the Cybercrime Security Research function at eBay, having spent the past 10 years across Threat & Vulnerability for a pan-European Stock Exchange, consulting in Threat Intelligence within Financial Services, and supporting clients as a Principal Analyst for a cyber security vendor.

An undergraduate (BSc Business Information Technology) and post-graduate (MSc Business Management) of Queen's University Belfast and University College Dublin.

EURASIA CONFERENCES

2nd World Conference on

Artificial Intelligence, Machine Learning and Data Science

October 19-20, 2023 | Paris, France

Document AI Pipeline for Data Extraction from Business Documents

Aleksandr Loginov[1*], Farkhad Kuanyshkereyev[2*], Md Raisul Kibria[3*], Henri Lagerroos[4], Andras Vajda[5]

[1]iconicchain Oy, Helsinki, Finland
[2]iconicchain Oy, Helsinki, Finland
[3]iconicchain Oy, Helsinki, Finland
[4]iconicchain Oy, Helsinki, Finland
[5]CEO iconicchainOy, Helsinki, Finland

Processing a large set of documents requires a lot of human labor, which is time-consuming, has high costs, and is also prone to mistakes. A tool for quick, efficient, and reliable extraction of data from documents significantly improves the productivity of people involved in working with data digitization.

This work introduces a novel pipeline to automate the processing of business documents. The pipeline consists of multiple AI models with separate purposes, including matching documents with similar layouts, extraction of data from both tabular and non-tabular fields, and writing it into a database. The tool is a human-in-the-loop solution, with the user specifying templates for various document types and highlighting the information they wish to extract. Document template creation is done with clustering techniques that help to detect groups of similar documents. A computer vision model suggests possible regions of interest (ROI) on the template.

The resulting pipeline enables the extraction of data from a wide range of documents with a single template for each document type. A combination of machine learning algorithms, object detection models, and custom neural networks is powerful enough to parse information from tables and detect ROI even when their positions shift. The proposed pipeline works on photos, scans, and computer-generated documents like invoices. The tool, initially designed for auditing, can be extended to any task that requires dealing with a large number of documents. This work improves the speed and accuracy of document data processing substantially while providing the same reliability as human supervision.

Biography:

Aleksandr is a Senior Data ScientistaticonicchainOy with 5 years of work experience in the FinTech and Oil&Gas industry. His areas of interest are computer vision (CV) and time series. In iconichainAleksandr is responsible for developing Document AI pipelines for audit purposes. Before that he created solutions for High-Frequency trading and for downhole equipment optimizationin oil wells.Aleksandr holds a master's degree in mechanics and mathematical modeling from Saint Petersburg Polytechnic University.

The Game Theory of Software Decisions

Ziv Levy
Data Science, Wix.com, Tel-Aviv, Israel

As we're working to build the best possible software engineering solution, we encounter many decisions we must make. Daily. Sometimes this involves very active and passionate conversations, which might sometimes go down the negative path, creating a bad atmosphere in the team. On top of that, it's a huge waste of time. But what if those daily decisions could be much easier and simple? In this talk I'll try to attack and eliminate the pain points of decision making in software engineering and will show how I helped my team benefit from a lighter decision making process.

Biography:

I volunteer as a first responder paramedic. I'm available 24/7 to help in any medical incident near me. Part of it involves decision making that might affect another human for life. Most of those decisions are based on medical protocols but are followed by experience and intuition. I believe that bringing those elements into day-to-day software decisions might accelerate the process and save a lot of time on philosophical discussions.

I'm currently working at Wix.com as a software engineer in the very exciting Wix's Data Science group. I'm an open-source enthusiast, have a fetish for web performance, loves technology at its best when it's visual, and… mixing techno sounds at night!!

Integrating Artificial Intelligence Models Across Patient Care Platforms: Revolutionizing Healthcare Efficiency and Effectiveness

Ernest Smiley
Georgetown Analytics and Technology, 2800 Eisenhower Ave, Suite 220, Alexandria, Virginia 22314 USA

Artificial Intelligence (AI) has transformed various sectors, with healthcare significantly benefiting. This presentation examines integrating AI models across patient care platforms and their potential to revolutionize healthcare.

This conference aims to share insights and develop an understanding of AI's role and capacity to enhance patient care. With patient-centered care being a priority in modern healthcare, AI can facilitate improved diagnosis, personalized treatment, streamlined workflow, and superior patient experience.

The presentation will focus on the nuances of AI integration, demonstrating how AI can be applied in real-time health monitoring, predictive analytics, automated reminders, and interactive patient engagement. It will also delve into the challenges faced during integration, including data privacy concerns, algorithm biases, and the need for extensive training.

Attendees will gain comprehensive knowledge of AI integration's benefits and challenges in patient care platforms. They will also receive practical guidelines on leveraging AI in optimizing patient management and care delivery.

Biography:

Ernest Smiley is the Founder and CEO of Georgetown Analytics, which focuses on data science, artificial intelligence, and predictive analytics platform, supporting geospatial, investments, cyber, talent management, and healthcare ecosystem opportunities throughout the United States. He also serves as Chief Data Scientist for Kingdom Capital as Chief Data Scientist (CDS) and Chief Information Security Officer (CISO) of Kingdom Capital. Ernest focuses on data science, machine learning, artificial intelligence, and predictive analysis within the cyber/information security, human capital management, and healthcare ecosystem. Ernest oversees data scientists who analyze statistical data, ensure data quality, and develop tracking and reporting systems to determine the effectiveness of models, rules, and other risk initiatives and programs. He leads the entire Information Security program for Kingdom Capital. Lead the strategy, planning, and implementation of cyber security and innovations seamlessly connecting all organization components, facilitating high-quality customer care through an efficient experience. He is the former Chief Data Scientist for National Geospatial-Intelligence Agency (NGA) in Washington, DC. He also served as Chief Technology Officer (Source), Chief Human Geography, Chief, Applications and Systems, Chief Systems Integrator (Geospatial), and Chief Cybersecurity. Ernest holds the following certifications: Certified Data Privacy Solutions Engineer (CDPSE), Certified in the Governance of Enterprise IT (CGEIT), Certified Software Analyst (CSA), Certified Information Security Manager (CISM), Certified in Risk and Information Systems Control (CRISC), Certified Project Manager (CPM), Certified Forensic Consultant (CFC), Certified Leadership Consultant (CLC), and Certified Internal Controls Auditor (CICA). Ernest holds a Master's Degree in Technology Management from Georgetown University, a Master of Business Administration (MBA) in Finance and Accounting, and a Bachelor of Science from the University of Maryland. He has a Master's in Information Technology Project Management from Carnegie Mellon University. He also holds a Graduate Certificate in Data Science from Georgetown University. He has completed several executive leadership programs at Harvard, Carnegie Mellon, and the Massachusetts Institute of Technology (MIT). Ernest was inducted into the Black Engineering – Hall of Fame in 2023. Also, Ernest was the 2017 Scientist of the Year.

Network Behaviour Monitoring using Deep Learning Technique

Prof. Dr. Mohd Nazri Ismail
Cyber Security Department (PKSRID)/National Defence University of Malaysia, Kuala Lumpur, MALAYSIA

One major problem faced by network users is an attack on the security of the network especially if the network is vulnerable due to poor security policies. Network security is largely an exercise to protect not only the network itself but most importantly, the data. This exercise involves hardware and software technology. Secure and effective access management falls under the purview of network security. It focuses on threats both internally and externally, intending to protect and stop the threats from entering or spreading into the network. A specialized collection of physical devices, such as routers, firewalls, and anti-malware tools, is required to address and ensure a secure network. Almost all agencies and businesses employ highly qualified information security analysts to execute security policies and validate the policies' effectiveness on regular basis. This research paper presents a significant and flexible way of providing centralized log analysis between network devices. Moreover, this paper proposes a novel method for compiling and displaying all potential threats and alert information in a single dashboard using a deep learning approach for campus network infrastructure.

Biography:

Prof. Dr. Mohd Nazri became Lecturer at University of Kuala Lumpur and National Defence University of Malaysia. Assoc. Prof. Dr. Mohd Nazri Ismail had a deep involvement in computer network research and was awarded the prestigious "Educator Award 2009 – R&D/Education category" by MARA (Malaysia Agency). He has supervised Ph.D. and Master Students and teaching at undergraduate and post graduate level. Assoc. Prof. Dr. Mohd Nazri Ismail has published more than 100 papers in national and international journals (indexed ISI, SCOPUS, IET) and IEEE conferences.

EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

October 19-20, 2023 | Paris, France

POSTER PRESENTATION | DAY 1

Production of bioactive HAP coating doped methylcellulose by plasma electrolytic oxidation method

Yael Roth[1], Avital Schwartz[1], Alexander Sobolev[1]
[1]Department of Chemical Engineering, Ariel University, Ariel, Israel

Titanium alloys are suitable for dental and orthopedic implants due to their excellent mechanical properties and low cytotoxicity. However, with all their advantages, they have low bioactivity and osseointegration properties. An increase in the compatibility of implants with human bone is achieved by building up a hydroxyapatite (HAP) coating on the surface of a titanium alloy [1]. It has been found that Plasma Electrolytic Oxidation (PEO) treatment and further hydrothermal treatment (HTT) produce bone-like coatings with good biocompatibility with natural bone.

This work used an electrolyte consisting of calcium acetate and calcium glycerophosphate, and methyl cellulose C = 0.1.2.3 g/l was introduced as a dopant to improve bioactive properties. To determine the bioactivity of the resulting coatings, the samples were placed in Hank`s solution at a temperature of 37 °C for 0.3.7.10.14 days.

An analysis of morphology (SEM), phase (XRD), and chemical composition (EDS) was carried out to study the effect of the methylcellulose additives. It was found that the highest growth rate of HAP crystals in Hanks' solution was achieved in samples with the addition of 1 g/L of methylcellulose. In addition, it should be noted that the introduced dopant slightly affects the coating's morphology, phase composition, and corrosion properties while increasing its bioactive properties.

Biography:

Yael Roth, 25 years old. Graduated with a bachelor's degree in chemical engineering at Ariel University. Currently working at the materials research center on bioactive and antibacterial coatings as part of the master's degree studies.

EURASIA CONFERENCES

3rd World Conference on

Advanced Materials, Nanoscience and Nanotechnology

October 19-20, 2023 | Paris, France

Investigation of the Growth Kinetics of Hydroxyapatite on CP-Ti and Ti65Zr Alloys Treated by Plasma Electrolytic Oxidation.

Elinor Zadkani Nahum[1], Svetlana Lugovskoy[1], Alex Lugovskoy[1] , Alexander Sobolev[1]
Department of Chemical Engineering, Ariel University, Ariel, Israel

A study was conducted to examine the growth kinetics of hydroxyapatite on titanium alloys, specifically CP-Ti and Ti65Zr. The specimens underwent Plasma Electrolytic Oxidation (PEO) treatment and were then immersed in Hanks' solution. PEO treatment was carried out using an AC mode with a current density of 4 A/dm2. The electrolyte used during PEO treatment contained calcium acetate and calcium glycerophosphate, facilitating the inclusion of calcium and phosphorus in the resulting oxide layer. This incorporation is known to promote osseointegration when applied to bone tissue. The treated specimens were subjected to different immersion times in the Hanks' solution, and subsequent analyses were performed to evaluate changes in morphology, chemical composition, and phase composition. Surface wettability was also tested, and the corrosion behavior of the treated samples was investigated. Observation of the CP-Ti samples treated with PEO for 5 and 30 minutes revealed the presence of small hydroxyapatite crystals on their surfaces. In contrast, the Ti65Zr sample exhibited a distinct layer of hydroxyapatite morphology after a 5-minute PEO treatment. When considering the immersion times, the Ti65Zr samples treated with PEO for 5 minutes and immersed for 14 days displayed the highest velocity of crystal growth. This finding was confirmed through morphology changes and electrochemical impedance spectroscopy (EIS) analysis. Furthermore, X-ray diffraction (XRD) analysis of the Ti65Zr samples treated with PEO for 5 minutes indicated that the Srilankite phase, accounting for 60% of the crystal growth, played a crucial role in achieving the highest crystal growth velocity and demonstrating favorable corrosion properties.

Biography:

Elinor Zadkani-Nahum, PhD student. Married with 3 children. Graduated with B.Sc amd M.Sc in chemical engineering from Ariel University.

EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

October 19-20, 2023 | Paris, France

KEYNOTE PRESENTATIONS | DAY 2

Valérie POTIN
Laboratoire Interdisciplinaire Carnot de Bourgogne (ICB), UMR 6303 CNRS Université Bourgogne Franche-Comté, Dijon, France

GLAD elaboration and structural characterization of nanostructured Janus W-Mo columns

GLancing Angle Deposition (GLAD) technique allows modifying the thin film structure and density by highly inclining the target with respect to the substrate. W-Mo Janus thin films were elaborated using magnetron co-sputtering coupled with glancing angle deposition. Tungsten and Molybdenum metals are miscible between them and have practically the same self-diffusion energy which could be a critical point for the Janus structure creation. Different samples were prepared using various elaboration conditions (Mo target current intensity varying from 10 to 200 mA, sputtering pressures of 0.33 and 1.5 Pa). Calculations show that these pressure values correspond to ballistic and thermalized regimes of sputtered atoms, respectively. Several analyses were carried out such as SEM, TEM and XRD to study the structure of the thin films, their morphology, elemental composition and microstructure. Thin films are porous and columnar with more or less inclined columns. This is due to the shadowing effect that characterizes the films prepared with high oblique angle.In specific conditions, W-Mo thin films exhibit a Janus-like structure with a clear separation between W and Mo, repeated within all columns. A checkboard-like structure has also been obtained after rotating the silicon substrate by 180°. The electrical resistivity was measured using Van de Pauw method and is also influenced by the target intensity, the resistivity and anisotropy values being correlated with the morphology of the thin films.

Biography:

Valérie Potin obtained a permanent position as Associate Professor at the University of Burgundy in Dijon in 2002. V.Potin's main research activity is in the field of nano-structured materials such as ultra-thin films and nano-objects. She is a transmission electron microscopy (TEM) specialist and studies the morphological, chemical, structural properties of such systems at nanometer scale using various TEM techniques, in particular conventional and high resolution TEM, EDS and STEM. She is author or co-author of 85 articles in peer-reviewed international journals (H-factor = 26). She has obtained three prizes during her carrier (EMRS 1997, MSM 1999, ANM 2014).

Gunnar Suchaneck
Institute of Solid-state electronics, TU Dresden, 01062 Dresden, Germany

Nonstoichiometric strontium ferromolybdate - a new electrode material for solid oxide fuel cells

This contribution is devoted to the application of Sr2FeMoO6- (SFM) and Sr2Fe1.5Mo0.5O6- (SF1.5M) in La1-xSrxGa1-yMgyO3- (LSGM)-based solid oxide fuel cells (SOFCs). We consider the most relevant physical properties (crystal structure, thermodynamic stability, iron and molybdenum valence states, oxygen vacancy formation and oxygen non-stoichiometry, electrical conductivity), A- and B-site ion substitution in such AB'B"O6 double perovskites, and the performance of Sr2Fe1+xMo1-xO6- (SF1+xM) SOFCs (polarization resistance, operation with hydrogen, operation with hydrocarbons and methanol). SF1+xM materials are excellent catalysts in hydrocarbon oxidation and can prevent carbon deposition due to the ability to exchange lattice oxygen with the gaseous phase. Moreover, they are sulfur tolerant. This opens the way to direct hydrocarbon fueled SOFCs, eliminating the need for external fuel reforming and sulfur removal components. Such SOFCs can be greatly simplified and operate with much higher overall efficiency thus contributing to the solution of the lack of energy problem in our modern world. Summarizing crystal structure, thermodynamic stability, Fe and Mo valence state, and oxygen vacancy formation generation energy, SF1.5M is a compromise that provides a cubic crystal structure, generates an electronic structure as well as oxygen vacancies that promote suitable electrical transport properties and catalytic activity in oxidizing and reducing atmospheres. The additional introduction of alkali earth metal elements on the A-site and transition-metal elements on the B-siteof SF1.5M affects the cation valence and oxygen-vacancy concentration, and thus improves the electronic or ionic conductivity of the material as well as its catalytic properties.

Biography:

Dr. Gunnar Suchaneck was Senior Researcher and Chief Assistant of the Solid State Electronics Laboratory at TU Dresden. He received his Ph.D. in physico-mathematical sciences from the Electrotechnical University - LETI, St. Petersburg, Russia, in 1983. Dr. Suchaneck has been retired since March 2021 but continues to work on a part-time basis. His current research interests include solid state sensor technology: ferroelectric thin film materials, metal oxide thin films, thin film deposition by reactive sputtering and plasma enhanced chemical vapor deposition, characterization of thin films by optical and electrical measurements. He has coauthored more than 280 technical publications in books, scientific journals, and conference proceedings, and has coauthored 15 patents.

Jana Pisk
Department of Chemistry, Faculty of Science, University of Zagreb, Zagreb, Croatia

Catalytic properties of materials containing molybdenum and vanadium metal centers

Transition metal catalysts, based on molybdenum, vanadium, and tungsten, are known to be active and selective in oxidation processes. The pioneering research involved investigations from molecular catalysts (mononuclear and polynuclear coordination complexes with Mo/V and W metal centers and various supramolecular structures) to the supported ones (polyoxometalates attached to the Merrifield supports). All catalysts were tested in (ep)oxidation reactions, following the green chemistry principles. Emphasis was placed on minimal catalyst loading, no organic solvents added to the reaction mixture, and utilization of oxidants available in water solution. Further research interest was the preparation and testing of the obtained materials as conductors and catalysts. For the first time, impedance spectroscopy was used to follow in situ transformations of mononuclear to polynuclear molybdenum complexes, supporting the results obtained by heat treatment and thermogravimetric analysis for mononuclear compounds. So far, the results have shown an exciting correlation between structure – conducting – catalytic properties. Furthermore, all of the studied complexes showed an increase in conductivity with temperature and behaved as semiconductors. Recently, a new point of investigation has been opened; the preparation of oxide glasses and glass-ceramics. Despite the extensive knowledge and research on the electrical properties of glass ceramics, there is a significant limitation in the exploration of their catalytic applications. For that reason, we decided to investigate the potential of glass-(ceramic)-based materials as catalysts in similar oxidation processes, previously operated. This approach represents an innovative extension of glass-(ceramics) applications, as they are primarily used as catalyst supports.

Biography:

J. Pisk got a Ph.D. in Chemistry in 2012. In 2010 she spent one year at LCC Toulouse and IUT P. Sabatier Toulouse III, France, where she learned the basics of catalysis. She was Marie Curie Cofund's fellow and did postdoctoral research at the LCC, Toulouse (Project “Diligent search for chemical bio-sources: Solvent-free homogeneous and heterogeneous oxidation processes catalyzed by polyoxometalates”). She was an Assistant Professor at the Faculty of Science, Zagreb, in 2018, and from 2023 she is an Associate Professor. Her major interest is the coordination chemistry of molybdenum and vanadium and the investigation of catalytic properties of the obtained materials.

Michael S. Harré
School of Computer Science, Faculty of Engineering, University of Sydney, Sydney, Australia

Catastrophe Theory for Dyadic Interactions: The Smooth Unfolding of Singularities in Economic Games

In a recently published article [Harris, McCallum, & Harré “On the smooth unfolding of bifurcations in quantal-response equilibria”, Games and Economic Behavior, Aug. 2023] appears the first proofs that the formation of multiple equilibria in two person, two strategy, game theory are in fact formally identical to the work of René Thom on Catastrophe Theory [R. Thom, "Structural stability, catastrophe theory, and applied mathematics", SIAM Review (1977)]. In this talk I will briefly review the main results of this finding, review the structure of the underlying potential function, and discuss some of the implications of this finding in the context of the recently renewed interest in the methods of Catastrophe Theory. These methods cover a significant area of modern research that is both theoretical and applied in nature, including economics, physics, and artificial intelligence.

Biography:

Dr. Michael Harre holds a PhD in economic game theory where he focussed on the psychology of games and the micro-economic foundations of tipping points where economic systems can suddenly collapse. He went on to lead a US Airforce funded program that produced an Artificial Intelligence that could simulate aspects of human psychology. He recently finished a significant project that looked at the structural instabilities of housing markets and their fundamental risks. He currently works on game theory and concepts from psychology, such as "Theory of Mind" and "Introspection", to produce more adaptive, social artificial intelligence.

Ruben Abagyan
San Diego Supercomputer Center, Skaggs School of Pharmacy and Pharmaceutical Sciences, University of California San Diego, California, USA

Layered AI and 3D Molecular Docking Models in a Pipeline for Drug Screening of Billions of Compounds for Drug Leads

A new computational platform of different types of computational models, docking, AI and hybrid ones, was designed to address that the challenge of identifying new targets, new druggable pockets, orthosteric or allosteric, and rapid search for new drug candidates by screening billions of compounds for a desired new profile. The improved models for different drug targets combine three-dimensional molecular information with AI-trained models predicting compound activities for each target. To model thousands of already characterized binding sites, also known as the Pocketome, we are maintaining a comprehensive collection of superimposed three-dimensional structures of known binding pockets, together with co-crystallized ligands, and ligands with known binding affinities, and designing derivative predictive models incorporating both docking and available experimental information. Molsoft ICM-pro docking tools provide the foundation of accurate docking and scoring. Researchers at Molsoft, Eugene Raush and Dr. Max Totrov, also led the development of GPU versions of the key docking algorithms to provide binding poses for the screened chemical compounds. The poses are used by the next level of machine learning models trained on a large body of activity data. The GPU ported software combined with iterative screening and massively parallel implementation of the pipeline enables screening of billions of molecules. Several examples illustrate the application of this pipeline for drug discovery in collaboration with several experimental drug discovery teams for novel anti-cancer candidates, and antivirals.

Biography:

Dr. Ruben Abagyan is a Professor in the Skaggs School of Pharmacy and Pharmaceutical Sciences at the University of California, San Diego. After his PhD in molecular biophysics, he became a staff member of EMBL, Heidelberg, founded MolSoft LLC, received his tenure at New York University and Courant Institute of Mathematics, continued from 1999 at Novartis Functional Genomics Institute as a Director of Computational Sciences, and the Scripps Research Institute as a professor. He received CapCure awards, Princess Diana Award and medal. R.A. co-authored 335 research publications and book chapters (over 42,000 citations, H-index of 97).

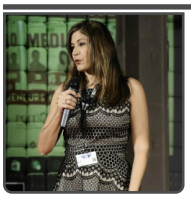
EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

October 19-20, 2023 | Paris, France

SPEAKER PRESENTATIONS | DAY 2



Algebraic Machine Learning as an alternative to ML

María del Socorro García Román[1] and Daniel Jaén Guedes[2]

[1]Department of Mathematics, Statistics and Operations Research, University of La Laguna, San Cristóbal de La Laguna, Canary Islands, Spain

[2]Undergraduate degree in Mathematics, University of La Laguna, San Cristóbal de La Laguna, Canary Islands, Spain

Machine Learning (ML) is an important branch of Artificial Intelligence that allows us to learn characteristics and predict the value of variables for which we only have examples. However, several of the classical ML methods are usually based on function minimization to fit a large number of parameters in a randomly created model. This method presents several problems, such as the difficulty in finding minima of complicated functions with many variables, or that sometimes the so-called overfitting appears.

In this work we take the alternative proposed by the authors Martin-Maroto, F. and García de Polavieja, G. in the pre-print “Algebraic Machine Learning ” (arXiv:1803.05252v2) based on algebraic structures, mainly graphs and semilattices, to find a predictive model. This new approach, called Algebraic Machine Learning (AML), is completely parameter-free, and furthermore, when applied in experiments, no evidence of overfitting has been found.

Among other types of problems, it can be used as a classification algorithm, that is, oriented to obtain a model that allows us to predict whether an element possesses a certain property, starting from a set of elements of which we know a priori if it fulfills this property. Using our own programming in Python, we solve a classic ML problem, such as the recognition of handwritten numbers using the AML algorithm, in order to be able to compare it with its resolution by means of already known ML/Deep Learning algorithms, so we can obtain comparative empirical results on the efficiency of both.

Biography:

Professor María del Socorro García Román, PhD in Mathematics by University of La Laguna, is specialized in Computer Algebra. She has a Master's in Algebra and Non-Commutative Geometry, and a Master's in Big Data and Business Analytics, which is complemented by a long business career in the innovation field.

In more than 12 years of teaching experience, she has published papers and participated in academic research projects and has worked for more than 15 years in innovation companies, holding senior management positions for 10 years. She is currently Associate Professor at the ULL and CTIO at HIADES Business Patterns SL.

Mathematical difficulties encountered in the study of the relativistic dynamics of extended particles

G. Vaman
Institute of Atomic Physics, P.O.Box Mg-6, Bucharest, Romania

A charged particle in accelerated motion radiates. The rigorous equation of motion of an extended charged particle must include both the external forces that act on the particle and the electromagnetic self-force that is given by the action of the own electromagnetic eld on the moving charged body. We are discussing here the mathematical diculties encountered in the calculation of the electromagnetic self-force of a Lorentz-contractible spherical shell in rectilinear motion.

A=80 Exotic Systems and Nuclear Structure

Fatima BENRACHI[1], Nadjet LAOUET[1], Hanane SAIFI[1]
1LPMPS Laboratory, Frères Mentouri Constantine-1 University, Constantine ALGERIA

Exotic nuclei located on drip lines beyond the Ni region are of particular interest in the nuclear structure studies and this region is still unexplored and the discovered isotopes have less known experimental data.

In this regards, we concentrated on some nuclei with A=80 mass and nucleons out of Z=28 and N=28 closed shells. We have performed some spectroscopic calculations in the framework of the nuclear shell model by means NushellX@ MSU nuclear structure code. The valence space consisting of (f5pg9) proton and neutron orbitals with new single particle energies outside of 56Ni doubly magic core is used and an effective interaction deduced from jj44bpn one is introduced taking into account the nuclear monopole effect in this mass region.

Energies of the low-lying states, transition probabilities and some others properties of these isobars have been determined. The obtained results have a good agreement compared to the available experimental data.

Biography:

Professor at Freres Mentouri Constantine 1 University (Algeria)

Doctorat Es-Sciences on 1992 at Claude Bernard Lyon University (France)

Doctorat 3ème Cycle on 1983 at Claude Bernard Lyon University (France)

Area of focus: Nuclear structure, medical physics

Gamma Spectrometry · Radiation Detection

ECOFRIENDLY SYNTHESIS OF GOLD NANOPARTICLES AND ITS APPLICATION TOWARDS COLORIMETRIC DETECTION OF Zn2+ AND Hg2+ IONS IN REAL SAMPLES ANALYSIS

Manjushree Bhattacharyya[1], Dr. Maidul Hossain[2]

[1]Research scholar, Department of Chemistry,Vidyasagar University, Midnapore-721102,West Bengal, India,

[2]Assistant professor,Department of Chemistry, Vidyasagar University, Midnapore-721102, West Bengal, India, ietnam

In recent times, nanoscience and nanotechnology are the most fascinated, interested areas of research due to rapid increase of commercial demand of nanoparticles day by day on account of its tremendous application in the field of optoelectronic, biosensor, bio-nanotechnology, biomedicine etc. In this work a facile, rapid and reproducible extracellular green synthetic approach has been demonstrated for synthesis of most stable AuNPs from bark extract of C.M.T.UV-Visible spectroscopy, FTIR, TEM, SAED and EDX techniques were employed for the characterization of synthesized CMT-AuNPs.The synthesized AuNPs exhibited very high selectivity, rapid response in recognition towards Zn2+ and Hg2+ ions. Colorimetric detection was well observed in naked eye with in 20 sec. This proposed sensor can detect very low picomolar level of Zn2+ and Hg2+ions (LOD value for Zn2+ and Hg2+ were found 1.36 pM and 24.60 pM respectively). Here we also studied effect of various parameters such as variation of conc of gold, temperature, incubation time, pH, salt, solvent (polar protic and polar aprotic) to know in which condition AuNPs have high stability and sensitivity. Moreover, here interference study was carried out to identify high selectivity of synthesized CMT-AuNPs probe in presence of different metal ions. Therefore, this simple, rapid, low-cost, sensing activity appeared to hold great sensibleness for detection of heavy metal ions in real sample.

Keywords:CMT-AuNPs, Characterization, Colorimetric, Naked eye, Sensing, Application.

References:

1. Passos, M.L.; Costa, D.; Lima, J.L.; Saraiva, M.L.M. Talanta 2015, 133, 45–51.

2. Mi, F.L.; Wu, S.J.; Zhong, W.Q.; Huang, C.Y. Phys. Chem. Chem. Phys. 2015, 17, 21243–21253.

In situ denitrification of groundwater by the combination of nano-zero valent iron (nZVI) particles and organic matter: Methodology and results

Damián Sánchez García[1], Alberto Barrera García[2], Eva Mena Gil[3], Pablo Cascales de Paz[3] and Isabel María Hurtado Melgar[2]
[1]Cetaqua Andalucía. C/ Severo Ochoa, 7, 29590, Málaga, Spain
[2]Aquatec. Avda. TenienteMontesinos, 8. Edificio Z, Planta 7, 30100, Murcia, Spain
[3]Aguas de Murcia. Plaza Circular, 9, 30008, Murcia, Spain

Nitrogen fertilizers are applied in agriculture to increase crop production, but their extensive use has resulted in degradation of groundwater quality and nitrate contamination of drinking water supplies. Although the European Union has been setting up environmental policies to protect water resources for 30 years, nitrate remains the main responsible for the poor chemical status of European groundwater bodies. In this respect, the EU-funded LIFE NIRVANA project has assessed a new methodology to reduce the concentration of dissolved nitrate in groundwater through combined injection of zero valent iron (nZVI) nanoparticles and organic matter. The purpose of this communication is to present the methodology followed and the first results obtained. Both reagents were injected into two injection wells, each connected to a different permeable level. The quantities, concentrations, frequencies and injection strategy were variable and depended on the pilot's performance and response. Regular monitoring was carried for in situ physico-chemical parameters and water major components, including nitrogen compounds. Results indicate nitrate removal ratios of up to 99%, with mean values around 50% In most cases, however, nitrate concentrations were variable over time, probably due to the intrinsic characteristics of the experimental site.

Biography:

DrDamián Sánchez holds a Bachelor of Science in Geology (University of Granada, 2003) and a Master of Science in Environmental Sciences and Technology (University of Granada, 2005). He obtained his PhD with the dissertation entitled «Application of the Water Framework Directive 2000/60/EC in the Guadalhorce River basin (Málaga). Initial characterization» (University of Málaga, 2010), which is currently available in Publicia Publishers.

"ANALYSIS AND DETECTION OF DEEP FAKE IMAGES USING DEEP LEARNING TECHNIQUES"

K.Ravikanth
Assistant Professor, Department of CSE, IIIT- Rajiv Gandhi University of Knowledge Technology, Basar, Nirmal-504107, Telangana, INDIA.

The technological advancements in the fields of machine learning and deep learning gave a way for realistic AI generated fake images called as Deep Fakes. They refer to manipulated images, videos, text and audio that cannot be distinguished from authentic ones. So, we can understand that there are enough potentials and also respective apprehensions from these deep fakes. Now a days, as we can observe more malafide utilizations of these deep fakes, which are becoming the threat to national security, individual privacy and democracy. So, the necessities for the deep fake detection techniques have become need of the hour. In recent days, we have plethora of platforms to generate deep fakes but we are lacking in the holistic deep fake detection techniques. To bridge this deficit, a lot of researches have been conducted so far using different ways like blinking of eyes, inconsistent head poses, background compressions, mouth movements, face forgery techniques, illumination and resolution effects etc. with the help of machine learning and deep learning techniques such as support vector machines (SVM), convolution neural networks(CNN) and CNN with DenseNet. As these deepfakes are posing many challenges, there is a need to sort out the best way as soon as possible by increasing the accuracy of the model which could help the humanity in constructive utilization of the technology.

Biography:

Mr.K.RaviKanth is currently working as Assistant Professor and Research and Development Coordinator in Department of CSE at Rajiv Gandhi University of Knowledge Technologies, Basar, Nirmal, Telangana. He is having a total of 16+ years of experience in Teaching, Research and Administration. His research areas include Machine Learning, Data mining, Deep Learning and NLP. He is a Professional body Member for CSTA, IAENG, IFERP, IAO, UACEE Bodies. He is a Review Member for 8 International Journals & Scientific Committee Member for 3 International Conferences. He has been awarded as KALPA ACHARYA AWARD, YUVA ACHARYA AWARD, TEACHERS GLORY AWARD and many more. He is also REVIEW BOARD MEMBER for various committees in the university such BOS, IIRS-ISRO, IIIT-RI, EPAM, PDC, PRC and many more. He has also done consultancy Projects in collaboration with MGNCRE.

Sir was invited as Resource Person/ Guest Speaker for more than 46 Sessions as part of Webinars, Workshops and FDP's. He has also published 16 papers at various International Conferences and Journals. He has organized various Conferences, FDP's, and Workshops & Webinars to motivate Staff and Students and guiding them over latest tools and technologies as part of Pandemic.

How Cybersecurity Can Leverage The Power Of Quantum Computing

Lavanya Palani
CyberSecurity, Centre for Development of Advanced Computing, Bangalore, Karnataka, India

Cybersecurity plays a pivotal role in unleashing the full potential of quantum computing. Protecting quantum computers and the sensitive data they process is of utmost importance. Quantum-Resistant Cryptography, encompassing diverse cryptographic techniques like post-quantum cryptography, stands as a critical defense against quantum attacks. Quantum encryption serves to secure data transmission by harnessing the principles of quantum mechanics, utilizing properties such as superposition and entanglement. A prominent example is quantum key distribution (QKD), which leverages quantum states like the Heisenberg uncertainty principle to establish unbreakable encryption keys. Through QKD protocols, secure key exchange based on quantum principles ensures confidentiality and integrity of shared keys. The continuous efforts of research and technological advancements aim to enhance the efficiency, security, and scalability of quantum encryption systems, further bolstering the realms of quantum computing and cybersecurity. The seamless integration of cybersecurity measures with quantum computing is imperative for building a robust and secure quantum future, ensuring the protection of sensitive information in this transformative era of technology.

Biography:

Lavanya Palani, a cybersecurity expert with 20+ years' experience, holds a master's in embedded system technologies. As Principal Technical Officer at CDAC, she's known for cutting-edge solutions, integrating quantum computing and ML for enhanced security. Lavanya's passion for diversity led her to mentor and support women in tech, earning her a reputation as a thought leader. A standout aspect of Lavanya's journey is her role as an influential member of the Women in Cybersecurity (WiCYS) community A prolific researcher, she contributes to cybersecurity publications. Her career showcases unwavering dedication, reshaping the industry's landscape. With an indomitable spirit, Lavanya strives to create a safer digital world by fortifying organizations against cyber threats. Her story embodies the power of passion, perseverance, and innovation in making a lasting impact.

The Internet of Behaviours: Challenges and Opportunities

Dr. Parikshit Narendra Mahalle
Senior Member IEEE
Professional Member – Society for Data Science
Dean – Research and Development
Professor and Head, Department of Artificial Intelligence and Data Science,
Vishwakarma Institute of Information Technology, Pune – 411048. India

The Internet of Behaviours (IoB) is a concept that involves the collection and analysis of data related to human behaviors, interests, and preferences. It is an extension of the Internet of Things (IoT) that focuses on understanding how, when, and why humans use technology. IoB brings together the best of data analysis , behavioral analysis, and technology to drive and influence behaviors. The data collected by IoT devices provides valuable insights into user behavior, interests, and preferences, which can be used to construct and promote new products and services. The IoB attempts to understand the data collected from users' online activity from a behavioral and psychological perspective. This talk focus on the concept, challenges and opportunities of IoB.

Biography:

Dr. Parikshit Narendra Mahalle is working as Professor at Department of Computer Engineering, at Vishwakarma Institute of Information Technology, Pune Since 1st July, 2021. Dr. Parikshit N. Mahalle has obtained his B.E degree in Computer Science and Engineering from Sant Gadge Baba Amravati University, Amravati, India and M.E. degree in Computer Engineering from Savitribai Phule Pune University, Pune, India. He completed his Ph. D in Computer Science and Engineering specialization in Wireless Communication from Aalborg University, Aalborg, Denmark. He has more than 19 years of teaching and research experience.

What is going on in AI…? Highlights from the 2023 AI Index Report

Nestor Maslej
Research Manager and AI Index Editor-in-Chief; Stanford Institute for Human-Centered AI, San Francisco Bay Area, USA.

The AI Index, led by a diverse team of some of the world's leading AI thought leaders, is a comprehensive initiative that tracks and measures the progress of Artificial Intelligence (AI) technologies. This presentation provides an overview of the latest trends in AI as told by the 2023 AI Index report. This talk will cover AI from a wide range of perspectives, including trends in technical performance, the economy, policy, ethics and public opinion. Learn about AI from the very same report that has informed some of the world's leading policymakers, researchers and CEOs.

Biography:

Nestor Maslej is a Research Manager at Stanford's Institute for Human-Centered Artificial Intelligence (HAI). In this position, he manages the AI Index and Global AI Vibrancy Tool. Nestor also speaks frequently about trends in AI. He has delivered presentations about the AI Index to teams at the World Economic Forum, Centre for Data Ethics and Innovation and Global Arena Research Institute. Nestor has also testified to the Canadian Parliament's House of Commons Standing Committee on Access to Information, Privacy and Ethics on the use and impact of facial recognition technology in Canada.

A Classification Model for Improving Student Academic Performance

Jiangping Wang
Department of Computer and Information Sciences, Webster University, St Louis, MO, USA

Early prevention and identifying students who might need help is a critical process for many universities. The approaches can be data driven through a predictive model. Data from previous classes can be collected and analyzed to identify individuals who might need support. The model can provide insights for further understanding on how the activity performance in early weeks may impact overall student success in a class.

A classification model implemented in this study provides an assistant way that is driven by data that simulates and reflects student performance in early weeks. The goal is to identify students who might be failing in the class. The presentation discusses the process of data collection and preparation for the classification model before the model is fitted on the data. The predictive power of the model is evaluated and interpreted.

Biography:

Jiangping Wang is a professor of Computer and Information Sciences Department of George Herbert Walker School of Business and Technology at Webster. The areas of his teaching and research include predictive analytics, time series, database concept, database applications, business technology, and data mining. He received his PhD from Missouri University of Science and Technology in USA. He worked in the Information Technology industry for seven years in St. Louis as a software engineer, system designer, and project manager.

Bringing Generative AI Models from Research to Production: An Industrial Challenge

Surabhi Sinha
Machine Learning Engineer Adobe, San Jose, California, USA

Generative AI is proving to be the next big revolution, with the potential to bring about transformative changes across all sectors of the economy. Its power to synthesize, innovate, and personalize promises to radically alter the ways in which we work, connect, and succeed in today's rapidly developing technological landscape.

In the intriguing world of generative AI, where imaginations are turned into pixels and words bring the mind to life, a major problem arises in terms of computational constraints. As these transformational models move from research to industrial settings, it takes constant creativity to unlock their unwavering potential. Scaling these models to the real-world while preserving performance is challenging and requires large-scale processing infrastructures along with significant optimization strategies and creativity. Also, unintentionally, biased outputs reinforcing unjust beliefs and prejudice can be produced due to the amplification of social biases in training datasets. To combat bias, these models need to utilize diverse and inclusive data for training, algorithms that take fairness into account, and a post-training bias correction phase. Trustworthy and secure models are essential. Severe consequences may result from mistakes made by autonomous systems. This emphasizes the need for these models to inspire confidence and transparency in their judgments, they must be explainable and interpretable to humans in addition to being rigorously tested on real-world data.

Industrial generative AI models have the potential to transform several industries but their integration entails overcoming scalability, reliability, bias mitigation, and security difficulties leading to efficient, trustworthy, and sustainable applications.

Biography:

Surabhi Sinha, a machine learning engineer working in the domain of efficient generative AI has several years of experience in enabling generative AI models to real-world applications. She is a USC computer science postgraduate and has been involved in not only making an impact in the lives of people but also taking businesses to the next level through her work in generative AI. She has been invited to peer review various national and international conferences as well as judge industry awards. Her expertise in efficient generative AI enables faster and more effective AI development while promoting energy efficiency and sustainability.

How AI will transform eGov and Smart Cities

Paulo H. Leocadio
Independent Researcher, Coral Springs, FL, USA

Smart government solutions have enabled most local and central governments to solve difficult problems, improving the lives of their citizens. As new technologies are made proofed by the market and become affordable for governments (notably Cloud computing; IoT, and Big Data in recent years), the fast integration of solutions based on those technologies made it possible for a new wave of governments either integrating, or migrating their processes, a renovation that swept IT operations old and new.

In this presentation I will indicate how Machine Learning and Artificial Intelligence are expected to have an even faster adoption where digital government and Smart Cities are well established.

From citizen facing services to government operations processes, Machine Learning will enable the effective automation of direct to citizen services, as much as Artificial Intelligence will play a defining role in fields like national defense/ national security, to the optimization of the use, transformation, and consumption of resources.

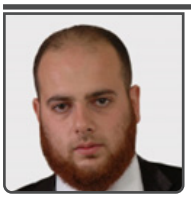
During the lecture, I will share my personal experience working on Smart Cities and eGov solutions as Solution Architect and Systems Engineer over the course of previous 7 years, offering findings and examples of how the smart government has been deploying technologies to solve their problems, and make a direct connection between these examples and where AI and Machine Learning will attach to or replace existing modules and whole solutions.

Biography:

Electronic and Computer Sciences Engineer with master's degree in international business and post graduate certification in Data Sciences. After a decade working as Hardware and Software Design Engineer (developer), moved to Microsoft Corp, working in Professional Services (Consulting, Enterprise Support, Technical Support) for over 20 years.

As an independent professional, currently working for digital government projects under the sponsorship of large public sector finding organizations, with roles as Data Scientist, System Engineer, and Solution Architect.

As an independent researcher, the study of real Machine Learning and AI and their real-world adoption; publishes periodically in specialized and market-orientedmagazines. Currently writing a Cloud Technologies book oriented to the Asian market



Enhanced Entrance and Exit Detection in Dynamic Environments using Object Detection and Linear Regression

Loai Abdallah[1] and Mutlaq Hijazi[2] and Murad Badarna[3]
[1]Department of Information Systems, The Max Stern Yezreel Valley Academic College Israel
[2]Department of Information Systems, The Max Stern Yezreel Valley Academic College Israel
[3]Department of Information Systems, The Max Stern Yezreel Valley Academic College Israel

In this research, we propose a novel approach to entrance and exit detection in dynamic environments, capitalizing on the symbiotic relationship between object detection and linear regression techniques. Traditional methods often lack precision in complex scenarios, prompting us to develop a more sophisticated solution. Our method revolves around capturing intricate movement patterns of individuals, achieved by harnessing state-of-the-art object detection algorithms that enable accurate tracking and the extraction of crucial data points, particularly y-coordinate variations of bounding box centers.

At the heart of our methodology lies the incorporation of linear regression, empowering us to construct predictive models for movement direction based on the y-coordinate data. This innovation facilitates a nuanced differentiation between entrances and exits, significantly enhancing detection accuracy. Moreover, our approach showcases resilience in scenarios fraught with challenges, such as occlusions and fluctuating lighting conditions, thereby fortifying the system's overall reliability.

Through extensive experimentation and rigorous evaluation, we present compelling evidence of our approach's effectiveness in real-world applications. Our findings underscore its capacity to discern entrance from exit with a high degree of fidelity, rendering it an appealing proposition for an array of practical implementations spanning security, crowd management, and retail analytics. By seamlessly amalgamating object detection with linear regression, our research contributes to the progressive evolution of computer vision, offering a streamlined, efficient, and potent avenue for advancing entrance and exit detection capabilities.

Biography:

Dr. Loai Abdallah is a renowned expert in data analysis and data science with over 15 years of experience in artificial intelligence, business intelligence, computer vision, and big data. He is a senior lecturer in the Department of Information Systems at The Max Stern Yezreel Valley Academic College and the founder and CEO of xBiDa, a company specializing in artificial intelligence for big data and computer vision. With a passion for research, Dr. Loai's expertise extends to data mining, big data, and business analytics, focusing on clustering, non-parametric statistics, and algorithms for approximate nearest neighbor search.

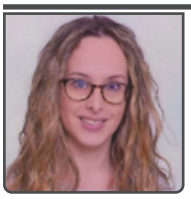
EURASIA CONFERENCES

2nd World Conference Series on

ENGINEERING, SCIENCE AND TECHNOLOGY

October 19-20, 2023 | Paris, France

POSTER PRESENTATION | DAY 2



Development of Nanostructured Lipid Carriers Loaded with Voriconazol for the Treatment of Topical Candidiasis

Amparo Nácher[1,2], Octavio Díez-Sales[1,2], Raquel Taléns-Visconti[1], José Esteban Peris[1] and Iris Usach[1]

[1]Department of Pharmacy and Pharmaceutical Technology and Parasitology, Faculty of Pharmacy, University of Valencia, Burjassot, Valencia, Spain;
[2]Instituto Interuniversitario de Investigación de Reconocimiento Molecular y Desarrollo Tecnológico (IDM), Universitat Politècnica de València, Universitat de València, Burjassot, Valencia, Spain

Superficial candidiasis is one of the most common fungal infections in humans and its current treatment is based on conventional topical formulations of imidazoles (1). Advanced drug delivery nanosystems such as nanostructured lipid carriers (LNCs) have gained increased relevance since they improve the diffusion of active ingredients through the skin barrier (2). Additionally, the increasing drug resistance in fungal pathogens makes it necessary to explore new treatment options. In this sense, the main objective of this work was to develop LNCs for the topical delivery of the second-generation triazole voriconazole (VCZ) intended for the treatment of Candida albicans infections. LNCs were prepared mixing solid lipids (choresterol, phospholipid 90G or 90H and cetostearyl alcohol), a liquid lipid (oleic acid) and surfactants (polysorbate 80 and poloxamer). VCZ concentration in all formulations was 500 µg/ml. After preformulation studies, two VCZ-loaded formulations were chosen, with the type of phospholipid and the proportion of polysorbate 80 used (1 or 2 %) being their main differences. Characterization of both formulations reported particle sizes smaller than 150 nm, polydispersity indexes close to 0.3, neutral Z potentials, encapsulation efficiency around 89 % and an adequate stability for 3 months. The morphology of the nanosystems was checked by TEM and the obtained micrographs confirmed their spherical shape and size. In conclusion, in this study VCZ was suitably loaded in LNCs which may be considered as a promising nanosystem for the treatment of superficial candidiasis.

Biography:

1. Arya, N.R., Rafiq, N.B., 2023. Candidiasis. In: StatPearls [Internet], StatPearls Publishing LLC, Treasure Island (FL). Available online: https://www.ncbi.nlm.nih.gov/books/NBK560624 (accessed on 4 September 2023).

2. Gupta, S., Bansal, R., Gupta, S., Jindal, N., Jindal, A., 2013. Nanocarriers and nanoparticles for skin care and dermatological treatments. Indian Dermatol. Online J. 4, 267-72.

AI-Powered Safety: Swift Anomaly Detection in Crowded Spaces

Reem Orfali
General Education Program , Dar Alhekma University/ Jeddah, Saudi Arabia

Introducing a groundbreaking study on real-time anomaly detection in crowded areas, perfectly aligned with the conference's theme of leveraging technology for societal betterment. Our research reveals a sophisticated deep learning framework seamlessly integrating advanced image processing and computer vision techniques. Through rigorous training, the model fuses convolutional neural networks with attention mechanisms to pinpoint deviations swiftly.

Balancing efficiency and accuracy, our framework leverages model pruning, parallel processing, and GPU acceleration to achieve unprecedented anomaly detection speeds, crucial for time-sensitive situations. Rigorous testing confirms the model's precision, notably eradicating false positives.

With implications spanning transportation hubs, public events, and urban security, our research embodies the conference's AI applications emphasis. Showcasing AI's transformative power in enhancing public safety, it ingeniously merges image processing and computer vision. Empirical validation highlights AI's potential for immediate, practical solutions, setting a new standard in addressing contemporary challenges. This study signifies innovation at the AI-safety nexus, poised to make an impactful contribution

Biography:

Ms. Reem Orfali serves as a Lecturer at Dar Al Hekma University and is a seasoned expert in Artificial intelligent with over 12 years of experience. Specializing in machine learning and data analytics, she has made significant contributions to both research and education, elevating the academic discourse and providing impactful practical applications in the field.

Two-Dimensional Tin Selenide nanosheets by simple solution chemistry for pseudocapacitive three-electrode studies

Chandradip D. Jadhav[1,*], Girish P. Patil[2], Refael Minnes[2,*]
[1]Department of Physics, Faculty of Natural Sciences, Ariel University, Ariel, Israel
[2]Department of Physics, Faculty of Natural Sciences, Ariel University, Ariel, Israel

Tin selenide (SnSe) has been thoroughly investigated as an important binary IV-VI compound for a wide variety of energy storage applications in the class typical layered metal chalcogenide family. Solution processed and phase-controlled synthesis of Two-Dimensional (2D) SnSe nanosheets with hexagonal morphology has been observed from Scanning electron microscope analysis. We fabricated binder-free active electrode and tested it for electrochemical performance. As-prepared SnSe electrode shows high specific capacitance of 1855 F/g at a scan rate 2 mV/s and good electrochemical stability. The findings show that the suggested simple synthesis technique for the construction of binder-free electrodes has a promising future in the development of high-performance energy storage devices.

Index