

## CharActER: a proposed AI for teaching Chinese the WRITE Way



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The Chinese writing system is the only one in the world that has been used continuously for several thousands of years. The unique character set with thousands of distinct symbols (known as *zi*) provides a common knowledge model for over a billion people speaking several major dialects, each of which is commonly recognized as a different language. However, throughout several major transformations the pictorial features embedded in the scripts have changed to more abstract forms, which helped make Chinese the hardest language to learn. A new approach to teaching and learning Chinese, Chinese the WRITE Way, is proposed in this paper, which emphasizes on conveying why a character is formed in its specific pattern and the compositional relationships between characters through “stories” about the original “design”. This WRITE Way approach is complimentary to and more effective for foreign students than the conventional “speak way” approach, which gives people the illusion that Chinese characters can only be learned by repeating. A software application, CharActor, an ordinary reality that acts out language learning based on knowledge modeling, animation and text-to-speech is first demonstrated. Exploratory efforts to construct an initial knowledge base using techniques like graph database and fuzzy logic based on ancient etymology sources normally used only by experts studying Sinology classics. Teaching plans (or virtual textbooks) built on character relationships are being developed, together with exercises that play like games. The target enhanced reality (ER) system with GPT-type user interaction and personalized learning experience is proposed.

### Biography:

Dr. Martin Q. Zhao is an Associate Professor of Computer Science at Mercer University in Macon, GA. His interests are in applied aspects of computing, including software engineering, database systems, machine learning and applications. Dr. Zhao’s research projects have been funded by external sources including AFRL and NSF. Dr. Zhao is also fond of Chinese culture, practicing Chinese calligraphy to gain insight into the “design” of characters. His experience teaching a course on “Understanding Chinese Culture within a Global Context” makes him good at telling stories behind Chinese scripts.

Dr. Andy D. Digh is an Associate Professor of Computer Science at Mercer University in Macon, GA. His interests are in the areas of algorithms, artificial intelligence, computer science education, and human-computer interaction. Dr. Digh has several recent peer-reviewed publications on machine writing technologies, CNN image classification, and effective pedagogical practices in the computer science classroom.