A Computation Model synthesizing the Rule based and Experience based Cognitive Processes of Chinese Characters

Sau-chin Chen
Tzu Chi University

Jon-Fan Hu
National Cheng Kung University

Ping Li
Pennsylvania State University

Abstract: A new model organizing two self-organizing maps (SOM) is presented here for synthesizing the rule based and experience based cognitive activities in support of processing the sounds and forms of Chinese characters. One SOM is constructed to form the phonological representations generated from the Chinese PatPho (Zhao & Li, 2009); and another SOM is aimed to produce the orthographic representations according to the Chinese character coding system (Chen, Zhao, & Li, 2009). The two SOMs are connected by an associative learning algorithm in shaping the mapping between the phonological and form patterns. The mappings belong to the phonetic radical and characters with this radical are suggested to construct the Chinese phonetic-and-sound relations. This presentation summarizes the tests on a specific group of characters representing the typical phonetic-and-sound relations. Insights of this model would reveal if these mappings are the origins of the rule based and experience based cognitive activities respectively.