Monday Seminar Series

Matherly Hall 0018
Monday, November 26th
4:05 to 5:00 pm

Chara Tsoukala

Using neural networks to model code-switched sentence production

People who speak several languages are able to switch from one to the other, a process called code-switching, between or even within sentences. The underlying mechanisms, however, are still not well understood; using computational modeling one can simulate code-switching behavior in multilinguals with the goal to explain the process. One way to model human cognition is by employing artificial neural networks (ANN), a.k.a. connectionist models. In this talk, I will give a brief introduction to ANNs and more particularly to the Dual-path model (Chang, 2002), a model of sentence production that is trained on message-sentence pairs and learns to produce a sentence, word by word, given its semantic representation. For instance, the simple message "AGENT=DEF, WAITER; ACTION=EAT;" is expressed in English as "The waiter is eating". We have extended the Dual-path model to handle two or more languages (Tsoukala et al., 2017) and we have simulated sentence production in early Spanish-English bilinguals and late speakers of English who have Spanish as a native language. We then manipulated language control to allow the model to produce sentences in either language or to code-switch. I will show how the code-switched patterns that the model produced are similar to the ones observed in bilinguals, for instance in the Puerto-Rican community in the US (Poplack, 1980), and how the model can be used to test specific hypotheses regarding code-switched production.

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