Exemplar-Modelling Vowel Harmony with Recurrent Neural Networks

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Outline

- Exemplar approach to vowel harmony
- Connectionist Models of Harmony
- Where does this experiment fit in?

Exemplar Approach to Vowel Harmony

Coarticulation and VH

- vowel harmony is the result of a diachronic process of sound change motivated by perturbatory effects of coarticulation on listener perception (Ohala, 1994; Blevins, 2004)
- an old claim: phonetic basis for VH irrelevant from a synchronic point of view (Anderson, 1980; Nevins, 2010)
- but evidence suggests it is possible to extract phonological patterns corresponding to VH from coarticulatory patterns (Przezdziecki, 2005)
- motivates search for models that integrate phonetic features and phonological structures

Motivating the exemplar approach

- mental lexicon integrates detailed representations of acoustic/auditory, articulatory, visual, spatial, and even social inputs (Port, 2007; Johnson, 2007; Coleman, 2002; Wedel, 2006; Johnson, 2006)
- phonological patterns are implicitly learned through repeated exposure to sequences of such inputs (Johnson, 2007; Goldsmith and Xanthos, 2009; Cole, 2009)
- Hawkins and Smith (2001) conduct a thorough review of neuro-psychological evidence concerning perception and acquisition and suggest that all linguistic structures ”are, as it were, by-products of the association of meaning with particular sound patterns.”

Requirements of an exemplar approach

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