

40 Years of Work in Computational Morphology

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I review work in computational morphology from the late 1970's until today, focusing as much as possible on cases where computational models attempt to be “explanatory”. Throughout much of its history, computational morphology has focused on finite-state methods, so I review those and show how finite-state models have been used to handle a variety of morphological phenomena. Morphological induction systems that essentially depend on finite-state or finite-state-equivalent methods have also been proposed, from the 1990's onwards. But as early as the 1980's researchers have experimented with neural approaches to learning morphology. Some of the errors produced by these early systems were notably unlike errors from human learners. With the recent shift to “deep learning” more generally, all of the most successful systems in the most recent CoNLL-SIGMORPHON competitions have been neural. I will review some recent work that analyzes the errors produced by these new systems, as well as providing some analysis of my own. I will end by discussing some possible implications of this recent machine learning work to morphological theory.