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Elham S. Khorasani* (esahe2@uis.edu), The Department of Computer Science, The university of Illinois at Springfield, One University Plaza, Springfield, IL 62703. *Formalization and Implementation of Computing with Words.*

The way humans deal with a huge amount of information in their environment is fundamentally different from how computers process this information. While computers constantly require precise numeric inputs to operate, humans have a remarkable ability to perform complex everyday tasks and make intelligent decisions in an inherently vague and imprecise environment without any measurements or precise computations. Inspired by this human singular ability, Computing with Words (CW) is introduced as a methodology which formulates human computation on imprecise words and propositions in natural language. Since its introduction, CW has been a subject of intensive studies; however, a big gap still remains between the theory and application of CW and there has not been yet any working implementation of CW. This research is aimed towards narrowing this gap. First, we provide a formalization of the knowledge representation language in CW, and then we use this formalization to develop a CW Expert System Shell (CWSHELL). CWSHELL is a powerful general purpose expert system capable of performing reasoning on imprecise words and complex propositions drawn from natural language. (Received August 21, 2013)