



Exploring the Feasibility of a Diagnostic Test for Dementia Based on Patterns in Speech

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The diagnosis of dementia can be challenging for clinicians. As the US and world populations age, the incidents of dementias like Alzheimer's is expected to grow substantially, threatening not only overburdened health care systems, but the world's economies as well. It is widely acknowledged that a simple and accurate diagnostic test for early stage dementia would be very beneficial, even though as yet we have no cures.

I will report on progress of an ongoing study that asks, "is it possible to detect dementia based only on patterns in speech?" If the answer is yes, then such a test would be of significant value, being non-invasive, and inexpensive. In a study begun in January 2013, we are collecting speech samples from volunteers in the early stages of Alzheimer's disease and a matching cohort of normal volunteers in an attempt to get some preliminary evidence that this might be possible. I will describe the signal processing and computational linguistics methods we are using to extract many features from each speech sample. Then the methods for seeking diagnostic patterns will be described (data mining), and some preliminary results will be shown. This is hoped to be a pilot study that will lead to support for an much expanded longitudinal study.

Dr. Schaffer is a Visiting Research Professor in the Department of Bioengineering. His research interests include theory and applications of evolutionary computation, machine learning, neural networks and bioinformatics. He is the recipient of the 2012 IEEE Computational Intelligence Society pioneer award in evolutionary computation.

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