

# THE EMORY PROGRAM IN LINGUISTICS

*presents a talk by*



## MICHAEL COVINGTON

Senior Research Scientist  
Associate Director  
Institute of Artificial Intelligence  
University of Georgia

TUESDAY, NOV 3<sup>RD</sup> @ 4:00 P.M.  
PSYCHOLOGY BLDG., RM 290

### “Linguistics, Schizophrenia, and Computers: Measuring Linguistic Indicators of Mental Illness.”

Schizophrenia is a chronic, disabling mental illness that affects about 1% of the population. Its most prominent sign is often abnormal use of language, such as monotonous intonation, distraction by unintended associations of one's own words, and, especially, breakdown of discourse structure. Syntax and morphology are obstinately normal even in severe cases.

All of these abnormalities are ripe for measurement by computer. We have been working on this since 2001, collaborating with GlaxoSmithKline (until 2005) and the University of Maastricht.

We developed a computer program that rates propositional idea density (information density), which is known to be reduced in Alzheimer's disease long before the onset of other symptoms, and found that it is not reduced in schizophrenia. We also found that the drug ketamine, which inhibits a neurotransmitter thought to be deficient in schizophrenia, *does* reduce idea density in healthy subjects; thus it does not exactly mimic schizophrenia.

Another parameter is discourse coherence. One simple test is to ask the patient to name the objects in a picture, and checking whether all the prominent objects are in fact mentioned. This is known as the Salient Items Test and is known to work in severe cases; tests with milder cases are under way. We are also experimenting with other tests of discourse coherence based on information retrieval technology.

All of this is part of a larger movement to characterize mental illness in terms of objectively measurable impairments. Potential benefits include detection of mild or prodromal cases; preservation of the dignity of the patient; and objective assessment of the effects of treatment.

*This event is co-sponsored by:*

**The Department of Mathematics and Computer Science, and  
The Department of Psychology**



Emory Program in Linguistics | [www.linguistics.emory.edu](http://www.linguistics.emory.edu)  
551 Kilgo Circle, Suite 202C, Modern Languages Building  
404.727.7904 | (fax) 404.737.7839 | [linguistics@learnlink.emory.edu](mailto:linguistics@learnlink.emory.edu)