

# Exploring Methods for Exploring Models

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## **Abstract**

I will use this colloquium as an opportunity to introduce the motivation, approach, and portfolio of research we have developed at AFRL's Cognitive Models and Agents Branch over the course of the last decade. A prominent feature of our approach is an emphasis on computational cognitive process modeling, especially in the context of cognitive architecture, so I will provide some background and history on that scientific perspective. Recently we have begun exploring the use of technologies and methods that are increasing the pace of our modeling progress. These include high performance and volunteer computing, stochastic sampling and predictive analytics, and dynamic visualization of interacting parameter spaces. The general point, which I hope to use to generate some constructive (and perhaps controversial) discussion, is that the cognitive science community needs a more efficient and productive infrastructure for achieving theoretical breadth and integration in mathematical and computational modeling.

## **Biographical Sketch**

Kevin Gluck is a Senior Cognitive Scientist with the Air Force Research Laboratory at Wright-Patterson Air Force Base, Ohio. His research interests focus on computational and mathematical models of cognitive processes to improve our understanding of human performance and learning, with emphasis on: learning and forgetting, fatigue, decision heuristics, and distributed and high performance computing for cognitive science. Kevin is leading the expansion of the Human Effectiveness Directorate's in-house investments in cognitive modeling personnel and research lines. He is also the Chair of AFRL's Robust Decision Making Strategic Technology Team, which is a multi-disciplinary, cross-Directorate team of scientists and engineers working on a collection of research projects striving to measure, model, and ensure high quality in complex decision processes and outcomes. Kevin's PhD in Cognitive Psychology is from Carnegie Mellon University. He has worked with AFRL for 15 years, has authored or co-authored more than 50 journal articles, book chapters, and conference papers, and has played a lead role in the organization and management of 13 international conferences and workshops. In portions of 2010 and 2011, Kevin held a "Gastwissenschaftler" (Visiting Scientist) position at the Max Planck Institute for Human Development in Berlin, Germany. In 2011 he was honored to be the first-ever recipient of the Governing Board Award for Distinguished Service to the Cognitive Science Society.