

AFRL RESEARCH TOPIC CALL FOR FY13

1. **Research Title:** Cognitive Modeling for Improved Training Effectiveness
2. **Individual Sponsor:** *List the AFRL research topic sponsor's contact information:*
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3. **Academic Area/Field and Education Level:** Cognitive Science; Computer Science; Mathematics (BA/BS; MS; PhD).
4. **Objectives:** Apply computational science algorithms and methodologies to the challenges of replicating human information processing in complex, dynamic Air Force training environments. Includes some or all of the following research activities: (1) implementation of candidate mechanisms to replicate human cognitive processes; (2) collection of empirical data from human subjects to identify critical phenomena; (3) validation of mechanisms by comparing model performance to human data; (4) development of formalisms that facilitate the development of large scale models of cognitive behavior; (5) enhancement of a system to leverage high-performance and volunteer computing for model exploration and testing; and (6) specification of an infrastructure that supports interoperability of cognitive models with complex simulation environments.
5. **Description:** The research is focused on two broad objectives. First, to develop and validate computational mechanisms that replicate the capacities and limitations of human information processing, including spatial cognition, decision making, strategy adaptation, learning/forgetting, and the impact of fatigue. Second, to develop formalisms and technologies to apply quantitative models of human cognition to Air Force training challenges, including readiness tracking, software-based tutoring, and artificial agents for training scenarios.
6. **Research Classification/Restrictions:** This research is unclassified.
7. **Eligible Research Institutions:** (Check all that apply.)

Universities (DAGSI)

AFIT (only)

USAFA

8. **Interest in Summer USAFA Cadet:**

If you are submitting a topic for the USAFA, please indicate if you are also interested in sponsoring a USAFA Cadet in summer of 2013. (**Avg Cost for USAFA Cadet for 33 days is \$5000**):

I would like to sponsor an USAFA Cadet in the summer of 2013: Yes No