

Opportunity Title: Computational and Mathematical Models of Human Performance and Learning

Opportunity Reference Code: AFSTFP-AFRL-2018-B6521

Organization U.S. Air Force

Reference Code AFSTFP-AFRL-2018-B6521

How to Apply A complete application package consists of:

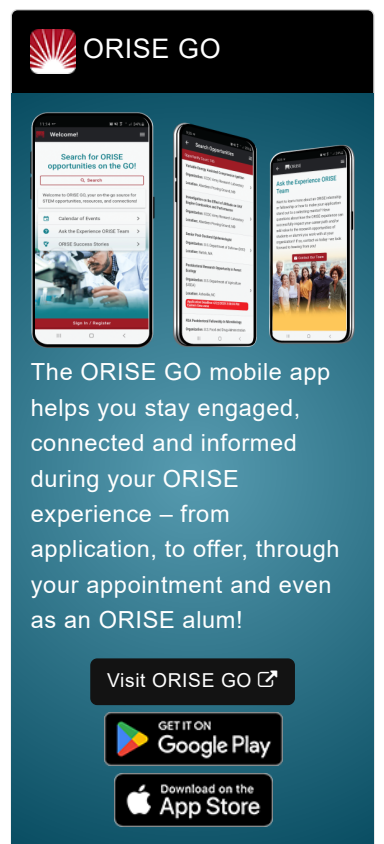
- An application
- A current resume/CV
- Transcript(s) – For this opportunity, an unofficial transcript or copy of academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. **Official Transcripts for Junior applicants must be sent to ORAU directly from the academic institution, including graduation date and degree awarded, and must be provided before the fellowship can begin.** All transcripts must be in English or include an official English translation.
- Three references

Additional documents to be uploaded must be in PDF format in a standard typeface no smaller than 12-point font, 1" margins, and double-spaced.

- Research Proposal (maximum of 10 pages)
- Dissertation Abstract (maximum of 1 page) *not required for Senior applicants*
- Summary of Previous and Current Research (maximum of 4 pages)
- List of Publications (maximum of 2 pages)

If you have questions, send an email to AirForceFellowships@orau.org. Please include the reference code for this opportunity in your email.

Description An emerging vision of the future Air Force involves an immersive global decision environment in which live, virtual, and constructive entities participate in an integrated system that unifies analysis, training, and operational functions. One of the many challenges between the current state-of-the-art and the realization of this vision is the ability to rapidly create valid computational cognitive models of a wide range of decision makers. AFRL established the Performance and Learning Models team to address this and related scientific and technological challenges. Our research objective is to improve the scientific understanding of how perceptual, cognitive, and motor processes come together in an integrated architecture that enables and constrains human decision making in complex, dynamic, non-stationary environments of interest to the Air Force. Our approach involves empirical research with human participants and the development of computational and mathematical models that account for and/or predict the human data. Our strategy for simultaneously maximizing foundational cognitive science contributions, relevance to USAF S&T needs, and transition potential is to do the empirical research and the computational cognitive modeling with both abstract, knowledge-lean laboratory tasks that allow for the isolation of key cognitive phenomena from the confounds associated with knowledge-rich domains and also with



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complex synthetic task environments inspired by real-world USAF operational requirements. Research areas of interest include persistence and generativity for computational cognitive models, language-enabled synthetic teammates, mathematical models for predictive and prescriptive training tools, and robust decision making in integrated human-machine systems.

References

Gluck KA: Cognitive architectures for human factors in aviation, in Human Factors in Aviation, 2nd Edition. Edited by Salas E, Maurino D. New York: Elsevier, 2010: 375

Gluck KA: Barriers, bridges, and progress in cognitive modeling for military applications, in Proceedings of the National Academy of Engineering's 2007 US Frontiers of Engineering Symposium. Washington (DC): National Academies Press, 2007: 99

Research Advisor

Prospective applicants are encouraged to contact the opportunity's Research Advisor, listed below, to discuss the applicant's approach for responding to this research opportunity and to discuss their potential collaboration on the research opportunity.

Dr. Kevin Gluck, kevin.gluck@us.af.mil, (937) 938-3552



Qualifications Candidates must have a Ph.D., Sc.D., M.D., D.V.M., or academically equivalent research doctorate before beginning the fellowship.

Candidates must have U.S. citizenship. Research opportunities at AFRL, AFIT, and USAFA are open to U.S. citizens only. Qualified applicants will receive consideration without regard to race, creed, color, age, sex, or national origin.

Stipend rates are determined by Air Force officials, and are based on the applicant's academic and professional background. The fellow must show proof of health and medical insurance. Health insurance can be obtained through ORAU. The fellow will not enter into an employee/employer relationship with ORAU, USAF, or any other facility, office or agency. Instead, the participant will be affiliated with ORAU for the administration of the appointment through the ORAU appointment letter and Terms of Appointment.





For more information, please visit the Air Force STFP website at <https://AirForceFellowships.orau.org>.

- Eligibility Requirements**

- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )
 - **Computer, Information, and Data Sciences** ([16](#) )

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- **Earth and Geosciences** ([21](#) )
- **Engineering** ([27](#) )
- **Environmental and Marine Sciences** ([12](#) )
- **Life Health and Medical Sciences** ([45](#) )
- **Mathematics and Statistics** ([10](#) )
- **Other Non-Science & Engineering** ([2](#) )
- **Physics** ([16](#) )
- **Science & Engineering-related** ([1](#) )
- **Social and Behavioral Sciences** ([18](#) )