

ARiA

Applied Research
in Acoustics LLC

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Lead Investigator: Jason E. Summers

Current Collaborators:

- Krasnow Institute for Advanced Study and College of Education and Human Development, George Mason University
- Communication Acoustics and Aural Architecture Research Laboratory, Rensselaer Polytechnic Institute

Areas of Interest

- simulation-based training for “incredibly complex” tasks such as sonar analysis (ACINT), which require an intricate combination of perceptual, cognitive, and metacognitive processes under conditions of extreme vigilance
- biomimetic and bio-inspired algorithms for machine learning and decision making (classification) in new and uncertain environments

Qualifications and Skills

- PI has expertise in both human perception and cognition and real-time simulation of complex physical processes
- key participant in developing current real-time simulation-based sonar training for Navy surface fleet, with ongoing involvement in enhancement efforts
- lead for project developing serious-game concept for current sonar-training system
- machine-learning algorithms developed for autonomous systems can enable games and training systems to better adapt to users

interested in working with groups on developing:

- pedagogical paradigms in immersive virtual environments, where **ARiA** can enhance transfer by selectively and efficiently improving simulation fidelity
- novel approaches in immersive virtual environments that seek to naturally cultivate metacognitive capabilities through approaches that are not explicitly pedagogical, as **ARiA** has previously proposed
- nonimmersive games, where machine-learning algorithms developed by **ARiA** can guide and improve dynamic difficulty adjustment

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