



Applied Research in Acoustics LLC

Capabilities Statement

Applied Research in Acoustics (ARiA) applies broad expertise in acoustics, modeling & simulation, signal processing, and cognitive science toward innovative science and engineering research & development services. Bringing together top-quality research scientists with systems and software engineers, ARiA solves real-world problems and develops real-world systems based on world-class research.

Headquartered in Washington, D.C., with offices in Culpeper, VA, ARiA is a privately held small business founded in 2010 by Chief Scientist Dr. Jason E. Summers after tenure with top DoD laboratories and industry.

ARiA: Real Research. Real World™

Overcoming the “Valley of Death”

Coupling expertise in research with experience in advanced development, demonstration, and validation of critical DoD systems, the skills of experienced software engineers, and strategic partnerships with industry, ARiA is uniquely poised to overcome the “valley of death” and transition basic and applied research (DoD 6.1/6.3) to advanced technology development and beyond (DoD 6.3/6.4+).

Capabilities

Acoustical Modeling & Simulation expertise includes

- real-time physics-based modeling algorithms for simulation and training
- computational models of propagation, reverberation, and scattering from boundaries and targets in the ocean, sediment, elastic media, and air
- system engineering for real-time simulation applications
- fidelity assessment for simulation-based training
- scale-model validation studies

Signal Processing expertise includes

- machine-learning algorithms for automated pattern recognition
- detection and classification for passive and active sonar systems
- perceptual and cognitive signal-processing algorithms
- supervised, unsupervised, semi-supervised, active and on-line learning
- model-based and physics-based signal-processing techniques
- adaptive and environment-dependent signal processing
- sparse and compressive sensing and beamforming

General Information

Applied Research in
Acoustics LLC

Founded: 19 March 2010

CAGE Code: 5YYD1

DUNS: 962150483

EIN: 27-2151428

NAICS Codes:

541712 (Primary)

541380

541690

541720

541511

541330

541990

Corporate Status:

Small Business — meets
SBA size standards for all
listed NAICS codes

Registered as a Small
Business in SAM /CCR /
ORCA

DCAA approved cost
accounting

Headquarters:

1222 4th St SW

Washington, DC 20024

(202) 629-9716

Branch Office:

209 N. Commerce St

Ste. 300

Culpeper, VA 22701

(540) 423-0323

ARiA

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Past Performance

- design, development, and delivery of WaveQuest™ a video-game and underwater-acoustics physics engine for game-based sonar training and STEM education
- design, development, and delivery of Synthetic ASW Generation Engine (SAGE™) a machine-learning and expert-system technology for automated scenario design in simulation-based sonar training
- development of clutter adaptive waveform design, match filtering, and normalization for mitigation of clutter in sonar systems operating in shallow water
- measurements, modeling, and signal processing for predicting auditory detection of helicopter noise in complex environments

Clients:



Qualifications and Experience

Chief Scientist, Dr. Jason E. Summers has over ten years of experience with physics-based computational acoustics and sonar signal processing in which he has served as PI and PM for research and advanced development. His experience includes serving as Technical Lead for Advanced Development of the SAST functional segment of the AN/SQQ-89A(V)15 sonar system under a \$250m PEO IWS 5A acquisition program.

NAVSEA SBIR

Principal Investigator: Mitigation of Biologically Induced Active Sonar Reverberation

ONR 321US HiFAST Program

Principal Investigator: Fidelity-Adaptive Simulation-Based Sonar Education and Training

ONR Sponsoring Scholars in Science

Principal Investigator: WaveQuest: An Interactive 3D Game

NAVSEA Surface Anti-Submarine Warfare Synthetic Trainer (SAST)

Technical Lead for Advanced Development

Principal Investigator for SAIC IR&D efforts on real-time simulation

NAVSEA Submarine Multi-Mission Team Trainer (SMMTT)

R&D Team-lead for All-World Environment Simulation (AWESim)

NATO: Characterizing and Reducing Clutter for Broadband Active Sonar

Represented United States in signal processing and classification

The Technical Collaboration Program (TTCP MAR TP-9): Broadband Active Auralization

Joint Technical Lead for United States

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