

Postdoctoral Research Opportunity

Advisor: Dr. Richard (Rick) Stroman

Location: US Naval Research Laboratory, Washington DC

Research Description:

Our goal is to improve the energy efficiency, resilience, and capabilities of the US Navy by managing this critical resource intelligently. The proliferation of autonomous systems, networking, energy harvesting, electric drivetrains, and microgrids has opened a world of opportunities for novel energy management strategies and techniques. We are tackling energy management challenges for autonomous vehicles, dismounted soldiers, utility-scale batteries, microgrids, hydrogen fuel production, and other systems. Current programs include research in:

- in-field mission planning tools to minimize soldier power system weight,
- scheduling algorithms to maximize the utility of shared battery chargers within platoons,
- energy-optimal path planners for autonomous vehicles that leverage weather forecast data,
- energy managers for unmanned aircraft with a hybrid fuel cell/solar/soaring powertrain, and
- multi-agent collaboration algorithms for ground vehicles which harvest and share energy.

These are not theoretical studies; results are verified with hardware in field experiments and demonstrations.

We are seeking applicants for postdoctoral positions who would like to work on these or similar research topics.

Qualified candidates will:

- have a Ph.D. in Mechanical Engineering, Electrical Engineering, Computer Science, Operations Research, or similar technical field,
- be a US citizen or permanent resident, and
- be proficient in one or more of MATLAB/Simulink, Python, C/C++, or R.

NRL Alternative Energy Section (Code 6113):

The NRL Alternative Energy Section conducts scientific and engineering research to improve the energy efficiency, resilience, and capabilities of the US Navy. In recent years we have focused on electrochemical devices such as fuel cells and batteries, and hybrid systems for vehicles and microgrids. We are vertically integrated with efforts ranging from laboratory studies to the development of full scale prototype systems. Many of our programs include collaborations with academic, government, and industrial organizations. Key competencies include controls, optimization, simulation, and prototype development.

Contact Information:

Richard O. Stroman, Ph.D.

Mechanical Engineer

Alternative Energy Section, Code 6113

4555 Overlook Ave SW

Washington, DC 20375

W: (202) 767-3115

E: richard.stroman@nrl.navy.mil

www.nrl.navy.mil