



UC DAVIS

ONR NEPTUNE Program Review

Monday, October 29th – Wednesday, October 31st, 2018
University of California, Davis

Monday, October 29th – Walter A. Buehler Alumni Center

2:30 pm Registration

3:00 pm Session 1 – Computing/Programming #1

- Scaling a Building Energy Audit (UC Davis)
- Autonomous Vehicle Lidar (ASU)
- Simulating Military Base Vulnerability to Extreme Events (ASU)

3:45 pm Session 1 Concludes

3:45 pm Break

4:05 pm Session 2 – Human-Technology Interactions

- Marine Corps Non-Tactical Transportation Energy (UC Davis)
- Mining Key-Hackers on Darkweb Forums (ASU)
- CyCIT-WS Cyber Critical Infrastructure Threat Warning System (ASU)
- Thermal Management Technologies for Low-Temperature Undersea Dive Persistence (MIT)
- Economic Model Predictive Control of Microgrids at FOBs(NPS)

5:05 pm Session 2 Concludes

5:15 pm Opening Remarks

- Paul Dodd, Associate Vice Chancellor for Interdisciplinary Research and Strategic Initiatives at UC Davis

Keynote Presentation

- Steve Robinson, Department Chair, Professor, Department of Mechanical and Aerospace Engineering at UC Davis

5:45 pm Dinner – UC Davis Alumni Center Moss Patio

7:30 pm Dinner Concludes



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Tuesday, October 30th – Putah Creek Lodge

7:45 am Breakfast and Registration

8:15 am NEPTUNE Update (ONR)

9:00 am Graduating to an Energy Career Panel

- Patricia Reily, Veterans Services Director, CSU San Marcos
- Mike Gravely, Team Leader for Energy Technology Systems Integration, Energy Research and Development Division, California Energy Commission
- Robert Marcial, Statewide Program Lead – Workforce Education & Training, PG&E Pacific Energy Center
- Ana Sarver, Lean Process Management Team

10:00 am Session 3 - Fuels

- Impact of Chemical Composition on Measured and Predicted Fuel Properties and the Resulting Combustion in Military Diesel Engines (USNA)
- Next Generation Fuels (Purdue)
- Fuel Integrated Energy Recuperative Aero-derivative (FIERA) GasTurbines (UC Davis)

11:15 am Session 3 Concludes

11:15 am Lunch

12:00 pm Tours - UC Davis Main Campus

- Battery Lab
- Energy Conservation Office
- Drone Demonstration
- STEEL Facility

1:30 pm Session 4 – Electronics and Equipment

- Adaptive, Sensor-Based Lighting for Security Applications (UC Davis)
- Harvesting Waste Thermal Energy from Ship Equipment (NPS)
- Ultra-wide Bandgap Semiconductor b-Ga₂O₃ Interface Engineering (Purdue)
- Reliability of Next-Generation Thermal Management Systems for High-Power Naval Electronics (Purdue)
- Microchannel Heat Exchanger Designs for Power Generation and Cooling (UC Davis)



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- Smart Energy Management for Unmanned Aerial System Operation in Complex Military Missions (UC Davis)

3:00 pm Session 4 Concludes

3:00 pm Break

3:15 pm Session 5 – Batteries

- Low-Cost Catalyst for Portable Hydrogen Generation and On-demand Power (Purdue)
- In-Situ Examination of Thermal Runaway in Lithium Ion Batteries (Purdue)
- Laser Assisted Large-Scale Manufacturing of 2D/0D Nanocomposites (Purdue)
- Electron Transfer in Mixed-Valent Systems to Improve Design of Non-Aqueous Redox Flow Batteries (UC Davis)

4:15 pm Session 5 Concludes

4:15 pm Break

5:00 pm Happy Hour and Poster Session

- Keynote Speaker – Steve Blank, Adjunct Professor, Management Science and Engineering at Stanford University

7:00 pm Conclude



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Wednesday, October 31st – Putah Creek Lodge

7:30 am Breakfast and Registration

8:00 am ESTEP Update

8:30 am H4D Student Presentation & H4D Update

9:30 am Session 6 – Computing/Programming #2

- Combat Power Monitor II (MIT)
- Knowledge from Human/Technology Systems Using Operational Records (ASU)
- Resilience of Critical Infrastructure to Cyber Attacks (ASU)

10:15 am Session 6 Concludes

10:15 am Session 7 – Microgrids

- Cyberphysical Simulation and Control of Interconnected Self-Organizing Microgrids (ASU)
- Second-Life Battery Microgrid Controls (UC Davis)

11:00 am Adjourn – Boxed Lunches available