

Final Agenda
18th International Symposium on
Unmanned Untethered Submersible Technology

Sunday August 11, 2013

6:00PM -9:00PM - **Registration: Sheraton Harborside Lobby**

Monday August 12, 2013

7:00AM - **Registration: Sheraton Harborside Lobby**

All Presentations will be held in the Main Ballroom on Monday August 12th

Opening - *Whipple Roberts* **BALLROOM**

8:00AM – **Opening Introduction**; Dick Blidberg,
Autonomous Undersea Systems Institute - USA

Special Presentations - **MAIN BALLROOM**

8:30AM - MTS UMV Committee is sponsoring a unique new networking event for UUST 2013; Make sure you plan on attending this unique event. A great way to meet all of the participants. Details on the mechanics of the event can be found at www.ignitespeednetworking.com.

10:00AM – **Break**

10:30AM- **Enabling New Underwater Robotics at Woods Hole Oceanographic Institution**, Dana R. Yoerger, Andrew Bowen Michael Jakuba, Deep Submergence Laboratory, Center for Marine Robotics, Woods Hole Oceanographic Institution - USA

11:00AM- **Regionally-deployed Adaptive Platforms for Ocean Research Technologies** ; Jim Costopulos, CEO, Global Oceans - USA

11:30AM - **Highly Resonant Wireless Power Transfer in Subsea Applications**; Colin McCarthy, WiTricity Corporation – USA

12:00 – 1:30PM – **Lunch**

1:30PM - Paper Cancellation

Systems - *Whipple Roberts* **BALLROOM**

2:00PM - **Slocum G2 gliders; Expanding the Capabilities**;

Clayton Jones, Doug Webb, Ben Alsup, Teledyne Webb Research, Falmouth, MA - USA

2:30PM - **Sabertooth a Seafloor Resident Hybrid AUV / ROV System for Long Term Deployment in Deep Water and Hostile Environments**; Jan Siesjö, Saab Underwater Systems ABC, Marcus Furuholmen Aker Solutions AS – Sweden

3:00PM – **Break**

3:30PM - **Autonomous Transient Ocean Event Monitoring (ATOEM)**, Kevin M. Ulmer, Ph.D., Sequester, Inc., East Sandwich, MA – USA

4:00PM - **Underwater Positioning of Multi-legged Subsea Robot for Submarine Exploration Equipment**, Seongyeol Yoo, Hyungwon Shim, Bong-Huan Jun, Gyeong-mok Lee, Hangoo Kang, Pan-Mook Lee, Ocean System Engineering Research Division, Maritime Ocean Engineering Research Institute, Korea Institute of Ocean Science & Technology (KIOST) - Republic of Korea

5:15PM - **Busses leave the Sheraton** for the Portsmouth Yacht Club

5:30PM - **Cocktail Reception** at the Portsmouth Yacht Club, New Castle, New Hampshire

8:30PM and 9:00pm - **Busses leave the Portsmouth Yacht Club** for the Sheraton Harborside

Whipple Roberts BALLROOM

AMPHITHEATER

Navigation

9:00AM - Resolving vehicle motion in an untethered unmanned underwater environment; Greg Rivalan, Teledyne RDI – USA

9:30AM - **Multi-vehicle Dynamic Pursuit with Acoustics and Coarse Quantization**: Brooks Reed*†, Josh Leighton*, Eric Gilbertson*, Mei Yi Cheung*, and Franz Hover*; * MIT Mechanical Engineering, † MIT/WHOI Joint Program in Oceanographic Eng. - USA

10:00AM - Break

10:30AM - **Run-Time Ethics Checking for Autonomous Unmanned Vehicles: A Practical Approach**
Don Brutzman, Duane Davis and George Lucas, Robert B. McGhee, Naval Postgraduate School - USA

11:00AM - Towards Three-dimensional Underwater Mapping Without Odometry: Alistair Dobke, Joshua Vasquez, Lauren Lieu, Ben Chasnov, Christopher Clark, Harvey Mudd College, Claremont, CA, Zoë J. Wood, California Polytechnic University, San Luis Obispo, California, Timothy Gambin University of Malta, AURORA Trust, Msida, Malta

11:30AM -

12:00 – 1:30PM Lunch

Modeling & Simulation

9:00AM - A Multi-Armed Bandit Formulation with Switching Costs for Autonomous Adaptive Acoustic Relay Positioning; Mei Yi Cheung, Joshua Leighton, Franz Hover, MIT Department of Mechanical Engineering - USA

9:30AM - **Thrust generation and propulsive efficiency in 'ground effect' for heaving and pitching high aspect ratio foils**; Jason Dahl, Stephen Licht, University of Rhode Island Ocean Engineering Department- USA

10:00AM - Break

10:30AM - Game Engine-Based Simulator for Autonomous Underwater Vehicles, Alex Strout & Roy M. Turner, School of Computing and Information Science, University of Maine, Orono, ME - USA

11:00AM - Bio-inspired flow sensing and control for autonomous underwater navigation using distributed pressure measurements; Francis D. Lagor, Levi D. DeVries,, Derek A. Paley, Collective Dynamics and Control Laboratory, Department of Aerospace Engineering and the Institute for Systems Research, University of Maryland, College Park, MD

11:30AM - How to Maximize Pectoral Fin Efficiency by Control of Flapping Frequency and Amplitude; John S. Palmisano*, Ravi Ramamurti**, Jason D. Geder**, Marius Pruessner*, William C. Sandberg**, and Banahalli Ratna*, *Center for Biomolecular Science and Engineering, Naval Research Laboratory, Washington, DC, **Laboratory for Computational Physics and Fluid Dynamics, Naval Research Laboratory, Washington,, DC - USA

12:00 – 1:30PM Lunch

Whipple Roberts BALLROOM

AMPHITHEATER

Sensors

1:30PM - AquaPix - A Low-Cost Interferometric Synthetic Aperture Sonar for AUVs: Sea Trials and Results, David Shea, Peter Crocker, Jeremy Dillon, Sean Chapman, Kraken Sonar Systems, St John's, NL - Canada

2:00PM - High-resolution Acoustic Camera on CR200 and Post-Processing; *Jin-Yeong Park, Hyuk Baek, Pan-Mook Lee and Bong-Huan Jun, Ocean System Engineering Research Division, Maritime Ocean Engineering Research Institute, Korea Institute of Ocean Science & Technology (KIOST) - Republic of Korea

2:30PM - Limit Cycling in Control of Underwater Vehicles Caused by Lossy Quantized Communication Channels: Eric Gilbertson, Franz Hover, MIT Mechanical Engineering – USA

3:00PM – Break

Sensors

3:30PM - Using Time of Flight Distance Calculations for Tagged Shark Localization with an AUV: Yukun Lin, Hannah Kastein, Taylor Peterson, Christopher Clark, Departments of Engineering & Computer Science, Harvey Mudd College, Claremont, CA, Christopher Lowe, Department of Biological Sciences, CSU Long Beach, Long Beach, CA - USA

4:00PM - Collision Avoidance Passive Sonar; Dale Green, Teledyne Benthos Inc. - USA

5:15PM - Busses leave the Sheraton for the Fosters Clambake

6:00PM - New England Lobster/Clambake - Foster's Clambake, York, Maine

8:30PM and 9:00pm - Busses leave Fosters for the Sheraton Harborside

Modeling & Simulation cont'd

1:30PM - A Comprehensive Comparative Analysis of Bio-mimetic MPF-type UUVs; John S. Palmisano*, Marius Pruessner*, and Jason D. Geder**, *Center for Biomolecular Science and Engineering, Naval Research Laboratory, Washington, DC, **Laboratory for Computational Physics and Fluid Dynamics, Naval Research Laboratory, Washington,, DC - USA

2:00PM - Power and Thrust Comparison of Bio-mimetic Pectoral Fins with Traditional Propeller-based Thrusters: John S. Palmisano*. Jason D. Geder**, Marius D.Pruessner*. Ravi Ramamurti**, *Center for Biomolecular Science and Engineering, Naval Research Laboratory, Washington, DC, **Laboratory for Computational Physics and Fluid Dynamics, Naval Research Laboratory, Washington,, DC - USA

Control

2:30PM - A Robust Framework for Failure Detection and Recovery for Terrain-Relative Navigation; Sarah E. Houts, Shandor G. Dektor, Stephen M. Rock, Stanford University, Stanford CA - USA

3:00PM – Break

3:30PM - Stability Criterion for a Wall-Following AUV Robert S. McEwen, Stephen M. Rock, Monterey Bay Aquarium Research Institute, Moss Landing, CA – USA

4:00PM - Integrated Control System for Autonomous Search Capability, Dr. Douglas E. Humphreys, Stacy J. Hills, Christopher J. Cannell, Vehicle Control Technologies, Inc., Reston, Virginia – USA

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6:00PM - New England Lobster/Clambake - Foster's Clambake, York, Maine

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Wednesday Morning - August 13, 2013

Whipple Roberts BALLROOM

AMPHITHEATER

Planning

9:00AM - Toward High-coverage Imaging of Hydrothermal Vent Fields: A Recursive Path-planning Method of an AUV; Yoshiki Sato*, Toshihiro Maki*, Ayaka Kume**, Takumi Matsuda**, Takashi Sakamaki*, and Tamaki Ura***, *Institute of Industrial Science, The University of Tokyo, Tokyo, Japan, **Graduate School of Frontier Sciences, The University of Tokyo, Chiba, Japan, ***Kyushu Institute of Technology, Fukuoka Japan

9:30AM - Development of Centralized Control System for AUV Group Operation, Igor Tuphanov, Alexander Scherbatyuk, Institute for Marine Technology Problems FEB RAS, Far Eastern Federal University, Vladivostok - Russia

10:00AM - Break

10:30AM - Assessing Automated and Human Path Planning for the Slocum Glider; *Hans Christian Woithe, **Mike Eichhorn, ***Oscar Schofield, *Ulrich Kremer, *Department of Computer Science, Rutgers University, **Institute for Automation and Systems Engineering, Ilmenau University of Technology, ***Institute of Marine and Coastal Sciences, Rutgers University - USA

11:00AM - Correlation of Sidescan Sonar Acoustic Shadows and Bathymetry for Terrain-Relative Navigation; Jose Padial, Shandor G. Dektor, Stephen M. Rock, Stanford University, Stanford, CA - USA

11:30AM - Distributed, Context-Based Organization and Reorganization of Multi-AUV Systems; David Gagne, Department of Computer Science, University of Southern Maine, Portland, ME, Sonia Rode and Roy M. Turner, School of Computing and Information Science, University of Maine, Orono, ME- USA

Summary **Whipple Roberts BALLROOM**

12:00PM – 12:30PM Panel TBD

12:30PM - 2:00PM Lunch

Operations

9:00AM - Ocean Observing in the 4th Dimension – Autonomous Glider Surveys of the Gulf of Mexico; Peter Brickley, Jim Feeney, Neha Sharma, Michael Christenson, Horizon Marine, Inc., Marion, MA - USA

9:30AM - Modular Low Logistics AUVs in Commercial Survey Applications; Thomas Hiller, Teledyne Gavia, Teledyne-Gavia ehf, Kópavogur, Iceland, Arnar Steingrímsson, Teledyne Webb Research, Robert Melvin, Teledyne Benthos - Iceland

10:00AM - Break

Operations

10:30AM - Seafloor Mapping and Imaging Efforts Using Autonomous Underwater Vehicles; Eric J Martin, Hans Thomas, David Caress, Monterey Bay Aquarium Research Institute, Moss Landing, CA – USA

Summary **Whipple Roberts BALLROOM**

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Agenda

UUST 2013 is possible only because of the support of the community. The following organizations deserve your support as they have provided support for this Symposium. The Autonomous Undersea Systems Institute (AUSI) and the AUV Applications Center (AUVAC) would like to take this opportunity to thank all of those organizations. Please click on their logos to view additional information about their products and organizations. **Thank you.**

