Dominic Jonak

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Education:

Carnegie Mellon University, Pittsburgh, PA
Bachelor of Science in Computer Science, 2003
Phi Beta Kappa, College Honors, University Honors

Positions:

Carnegie Mellon University, Pittsburgh, PA — 2003 – current
Field Robotics Center, Robotics Institute

- Senior Research Programmer (2007)
- Research Programmer (Fall 2003)
- Research Assistant(Spring 2003)
- Website Committee Chair (2010-current)

Selected Projects:

Reliable Autonomous Surface Mobility (RASM) — 2010 - current

- Ported mesh navigation software to Lunar All-Terrain Utility Vehicle (LATUV)
- Designed enhancements to identify moving obstacles

Collaborative Technology Alliance (CTA) — 2009 - 2010

- Implemented anonymous publish/subscribe messaging and logging
- Created 6 DOF pose estimator for Gator Utility Vehicle
- Calibrated interial sensors, wheel encoders and nodding laser
- Addressed issues in the codebase, documentation and operations

Lunar Rover Initiative (LRI) — 2007 - current

- Field tests at Moses Lake Dunes, WA (2 weeks) and Mauna Kea, HI (2 weeks)
- Controlled tests at Glenn Research Center (many trips, 1-3 days each)
- Demonstrated long (8+ hours) autonomous traverses in darkness
- Responsible for low-level drivers as well as high-level navigation
- Implemented interface used by operators, partners and remote users

Science Autonomy/Science on the Fly (SOTF) — 2005 - 2007

- Field test at Amboy Crater, a lava flow in California (4 weeks)
- Developed multi-sensor multi-scale mesh navigation system
- Created 3D visualizations of rover maps

Deep Phreatic Thermal Explorer (DEPTHX) — 2006 - 2007

- Field tests at Sistema Zacaton, sinkholes in Mexico (4 weeks/3 trips)
- Responsible for navigation, plan execution and fault detection
- Developed interactive operator interface and improved realtime visualization

Life in the Atacama (LITA) — 2003 - 2006

- Field tests at the Atacama desert in Chile (10 weeks/2 trips)
- Worked with science team to improve rover utilization
- Improved navigation software to realize reliable kilometer traverses

Outreach:

Rover demonstrations

- US Science and Engineering Festival in Washington, DC (2010)
- PITTCON 2010 in Orlando, FL (2010)
- Carnegie Museum of Natural History in Pittsburgh, PA (2009)
- Imiloa Astronomy Center of Hawaii in Hilo, HI (2008)
- Carnegie Science Center in Pittsburgh, PA (2008)
- Arizona State University in Tempe, AZ (2007)
- Museo Interactivo Mirador in Santiago, Chile (2005)

Public relations

- Exhibited Scarab rover for Congressional leaders at NASA Day on the Hill 2010
- Created postcards and illustrated field notes (LRI, DEPTHX)
- Maintained project website (LRI, DEPTHX, LITA)

Selected Publications:

Design and field experimentation of a prototype Lunar prospector
David S. Wettergreen, et al
The International Journal of Robotics Research, doi: 10.1177/0278364910370217, 2010

Experiments in Navigation and Mapping with a Hovering AUV
George A. Kantor, et al
International Conference on Field and Service Robotics, 2007

Life in the Atacama: Searching for life with rovers (science overview)
Nathalie A. Cabrol, et al
Journal Geophysical Research, 112, G04S02, doi:10.1029/2006JG000298, 2007