

Michael D. Wagner

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Biographical Sketch

Michael Wagner has ten years of experience building robots to operate in the most extreme environments on Earth. His experiences draw from in systems integration, software engineering, field testing, and control systems design. Currently he is the software lead for the Gladiator Tactical Unmanned Ground Vehicle for the U.S. Marine Corps where he is focused on building controllable, safe software for teleoperation. From 2002 to 2006 he managed software development on the Life in the Atacama project and helped direct science operations of the Zoë rover in the Atacama Desert. On the Robotic Search for Antarctic Meteorites, he developed a novel science autonomy system for the Nomad robot, and served as technical lead of the January 2000 expedition to Elephant Moraine, Antarctica. His work on the Sun-Synchronous Navigation project included development of control systems for the solar powered Hyperion robot, culminating in July 2001 with an expedition to Devon Island in the Canadian Arctic. He has also developed several types of human / robot interfaces, from teleoperation software for Hyperion to the EventScope Project, where he developed technologies that enable students to interact with data from the Mars Exploration Rover mission.

Education

M.S. Electrical and Computer Engineering, Carnegie Mellon University, 2002

B.S. Electrical and Computer Engineering with Physics Minor, Carnegie Mellon University, 1998

Professional Experience

Commercialization Specialist, Robotics Institute, Carnegie Mellon University (Nov 06 – Present)
Senior Research Programmer, Robotics Institute, Carnegie Mellon University (Aug 03 – Nov 06)
Research Programmer, Robotics Institute, Carnegie Mellon University (Jan 99 – Aug 03)
Lead Researcher, Proto Innovations, LLC (Mar 05 – Present)
Founding Member, 18th Street Innovations, LLC (Sep 03 – Sep 05)
Software Engineer, Platform Digital, LLC (Jul 03 – Jan 05)
Adjunct Faculty, Department of Computer and Information Technology, Community College of Allegheny County (Mar 99 – Jan 03)

Selected Publications

- M. D. Wagner, S. Heys, D. Wettergreen, J. Teza, D. Apostolopoulos, G.A. Kantor, and W.L. Whittaker, "Design and Control of a Passively Steered, Dual Axle Vehicle", *8th International Symposium on Artificial Intelligence, Robotics and Automation in Space*, September, 2005.
- D. Wettergreen, N. Cabrol, V. Baskaran, F. Calderon, S. Heys, D. Jonak, R.A. Luders, D. Pane, T. Smith, J. Teza, P. Tompkins, D. Villa, C. Williams, and M.D. Wagner, "Second Experiments in the Robotic Investigation of Life in the Atacama Desert of Chile", *8th International Symposium on Artificial Intelligence, Robotics and Automation in Space*, September, 2005.
- S. Weinstein, D. Pane, L.A. Ernst, E. Minkley, F. Lanni, D. Wettergreen, M.D. Wagner, S. Heys, J. Teza, and A. Waggoner, "Fluorescence Imager for Biological Imaging in Daylight", *Lunar and Planetary Science Conference XXXVI*, March, 2005.
- D. Wettergreen, P. Tompkins, C. Urmson, M. Wagner and W. Whittaker, "Sun-Synchronous Robotic Exploration: Technical Description and Field Experimentation", *International Journal of Robotics Research*, April, 2005.
- P. Coppin, M. D. Wagner and the EventScope Team, "EventScope: A Telescience Interface for Internet-based Education", Presented at the Workshop on Educational Applications of Online Robots, IEEE International Conference on Robotics and Automation, Washington, DC, May, 2002.
- M. D. Wagner, D. Apostolopoulos, K. Shillcutt, B. Shamah, R. Simmons, W. L. Whittaker, "The Science Autonomy System of the Nomad Robot", *2001 IEEE International Conference on Robotics and Automation*, Seoul, Korea, May, 2001, pp. 1742-1749.
- L. Pedersen, M. D. Wagner, D. Apostolopoulos, W. L. Whittaker, "Autonomous Robotic Meteorite Identification in Antarctica", *2001 International Conference on Robotics and Automation*, Seoul, Korea, May, 2001, pp. 4158-4165.

Achievements and Honors

Initiated several research projects, secured over \$1.4M in grants and subcontracts
Serves on board of directors for the Brashear Association and Pittsburgh Community Services, Inc.
Received "Outstanding Volunteer Award 2004" by Pittsburgh's South Side Local Development Company and PNC Bank
Coached three teams of middle school students in FIRST LEGO League regional championships
Awarded Antarctic Service Medal for work in January 2000

Skills

Programming / Computing

C/C++, Java, Matlab, Python, HTML, PHP
Networking / middleware: JAUS, TCP/IP sockets, NDDS, CMU IPC, CORBA
Linux, Windows, VxWorks. DOS

Engineering

Verilog HDL, MAGIC, Cadence
Machine shop qualification including use of mills and lathes
Architecture and verification of superscalar pipelined and out-of-order CPUs
Designing and programming I/O devices, FPGAs, shared memory, process scheduling

Teamwork / Management / Business Development

Organized and prepared 25 grant proposals to NASA, NSF, local foundations and others
Managed fast, iterative software development on cutting-edge robotics projects
Participated in and lead expeditions to Antarctica, the Arctic, and the Atacama Desert
Experienced in integrating software from co-workers and graduate student research
Presented to audiences from elementary students to scientists and military officers
Strong communication skills with diverse team members and customers

References are available upon request