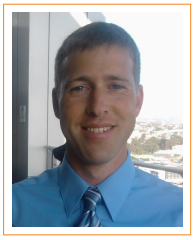
# Thomas Denewiler

*Robotics Engineer*


tdenewiler@gmail.com
denewiler.us
www.linkedin.com/in/tdenewiler/
github.com/tdenewiler

*Prediction is very difficult, especially if it's about the future.*
Niels Bohr

## Skills

### Expert Skills

| | |
|---|---|
| Hardware | Robotic Sensors (Perception, Localization) |
| Algorithm Development | Kalman Filters, Vehicle Control |
| Systems Engineering | *** |

### Development

| | | | |
|---|---|---|---|
| Languages | C, C++, Python, Shell/Bash, GNU Make | Tools | CMake, Doxygen, Trac, Confluence, Jira, Stash, GitHub, Jenkins |
| Source Management | SVN, Git, Mercurial | Robotics Frameworks | Robot Operating System†, Autonomous Capabilities Suite* |

### Office and tools

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|---|---|---|---|
| Office | OpenOffice/LibreOffice, Microsoft Office, Gimp, Inkscape | Documentation | TEX, LATEX |

## Experience

### Robotics Experience

2013
**Principal Investigator**, *SPAWAR Pacific*, San Diego.
ONR Code 30 Ground Autonomy Systems Integration
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2011
2012
**Lead Engineer**, *SPAWAR Pacific*, San Diego.
Long Range Obstacle Detection
- Outfitted Ford Escape Hybrid with large number of perception and localization sensors and computing.
  - Perception: Velodyne lidar, Ibeo lidar, Delphi automotive radar, GigE stereo cameras, FLIR stereo cameras.
  - Localization: Novatel DGPS, DGPS serial radio, Microstrain IMU, GINA IMU, KVH gyro.
  - Computing: Installed rack, rackmount servers, and power distribution, created read-only Linux filesystem.
- Ported autonomy algorithms from ACS to ROS.
- Created URDF for system from SolidWorks 3D CAD models.
- Implemented joystick teleoperation of vehicle.
- Directed implementation of supervised learning algorithm for lidar calibration and object segmentation.

*Developer
†Contributor

2009
2011

**Systems Engineer**, *SPAWAR Pacific*, San Diego.

EOD Robotics Autonomy Developer

- Improved Kalman filter for localization using coordinate ascent machine learning.
- Implemented control Lyapunov function-based control algorithm for waypoint navigation and showed significant improvement over PID controller.
- Added use of CMake macros and functions to Autonomous Capabilities Suite build system to greatly simplify addition of new modules to architecture.
- Installed Trac on main development server for management and developer use.

2005
2009

**Lead Engineer**, *SAIC at SPAWAR Pacific*.

Autonomous UAV-UGV Refueling

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2001
2008

**Mechanical Engineer**, *SAIC at SPAWAR Pacific*.

Mobile Detection, Assessment and Response System (Ground)

- Managed wireless communications infrastructure for mobile robots.
- Created tools to map wireless signal strength and GPS satellite observability.
- Rapid prototyping of novel large UGV hardware (marsupial capability, UAV landing/refueling pad, automatic gate operation).
- Supported large number of system test events at remote locations throughout U.S.

## Other Experience

2011

**Engineering Mentor**, *University of California*, San Diego.

Computer Science Department, Prof. Ryan Kastner's Lab

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## Education

2009–2011

**Master's, Mechanical Engineering**, *University of California*, San Diego.

Focus on Controls & Estimation, Thesis: Improving Autonomous Navigation in EOD Robots, Class notes available on homepage

2004

**C/C++ Programming**, *University of California Extension*, San Diego.

Introductory Course

1996–2000

**Bachelor's, Mechanical Engineering**, *University of California*, San Diego.

## Personal interests

| | |
|---|---|
| Sports | Volleyball, Basketball, Hiking, Swimming |
| Contributions | Robot Operating System, UCSD Lecture Notes |
| Volunteer | Mentor in Big Brothers, Big Sisters from 2005 – 2009 |
| Others | Traveling, Reading, Gardening |