

Benjamin Reinhardt

Innovation, Intensity, and Tenacity for robotics, augmented reality, and reprogrammable hardware
<http://benjaminreinhardt.com> | reinhardt@alumni.caltech.edu | 513.703.3332

EDUCATION

CORNELL UNIVERSITY

PhD Mechanical Engineering,
 Computer Science Minor
 Expected May 2015 | Ithaca, NY
 Focus: Space Robotics
 NASA Space Technology Research
 Fellow
 Lester B. Knight Fellow

CALTECH

BS Mechanical Engineering and
 History
 2010 | Pasadena, CA
 GPA 3.7

LINKS

Github:// [bzreinhardt](#)
 LinkedIn:// [benjaminzreinhardt](#)
 YouTube:// [SeigeEngineer](#)
 Twitter:// [@ben_reinhardt](#)
 Quora:// [Benjamin-Reinhardt](#)

TECHNOLOGY XP

ATOMLAND

• Embedded hardware • Sensor Fusion
 • Machine Tools • 3D Printers • Motor
 Controllers

BITLAND

• MATLAB • Python • C • Solidworks
 • Point Cloud Library • C++ • HTML •
 ROS • Java (Rusty)

PROJECTS

• Amphibious Robots
 • Two Story Trojan Horse
 • Choreographed lightsaber battles
 • Restarted elevator-riding tradition
 • Kinect-based robot grasp detector
 • Trebuchets
 Ditch Day Adventure Hunt:
 • Auto-collapsing concrete wall
 • Reverse geocache box • 12-ft ice
 climbing wall • Electric clue-Palantir •
 Light-connection maze

EXPERIENCE

NASA AMES | Guest Scientist, Intelligent Robotics Group

Summer 2014 | Mountain View, CA

- Designed and fabricated a prototype robotic inspector to demonstrate new actuators.
- Demonstrated actuator operation on a low-friction air table.
- Updated a visual tracking system to include wireless hardware-in-the-loop control.

Summer 2013 | Mountain View, CA

Controls engineer building a room-sized 6-DOF microgravity simulator

- Designed and implemented controller that translated force inputs to accurate zero-g dynamics
- Implemented a learning algorithm to run automated tests that adjusted the system model and tuned gains

NASA JPL | Technology Research Fellow, Robotics Group

Summer 2012 | Pasadena, CA

- Created and simulated new control algorithms for an induction-based spacecraft actuator.
- Designed and built experiment to characterize eddy-current forces for actuation.

AEROVIRONMENT INC. | Research Initiative Intern

Summer 2009 | Monrovia, CA

- Built a photovoltaic rig for powering aquatic robots. Tested the rig in a fish tank and the open ocean.
- Built a model of wind flow over large buildings from experimental data.
- Ran thermal tests on UAV components.

VIRTUAL LUNG PROJECT | Research Assistant

Summer 2008 | UNC Chapel Hill

- Developed simulations of cilia-driven fluid flow in the lungs.

RESEARCH

CORNELL SPACE SYSTEMS DESIGN STUDIO | Graduate Student + Lab Manager

Summer 2010 – Present | Ithaca, NY

Designing, modeling, and implementing a novel EM actuator for orbital inspection

- Developed simulation framework and visualizer for electromagnetic spacecraft actuators.
- Built fast algorithms to calculate eddy-current forces for dynamic actuation.
- Mentored several masters projects and senior projects.
- Rebuilt lab website for modernity and mobile friendliness.

PUBLICATIONS

Please see <http://benjaminreinhardt.com/pages/papers/>