Benjamin Reinhardt

Innovation, Intensity, and Tenacity for robotics, augmented reality, and reprogrammable hardware
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EDUCATION

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

CALTECH
BS Mechanical Engineering and History
Grad. June 2010 | Pasadena, CA

LINKS

Github:// bzreinhardt
LinkedIn:// benjaminzreinhardt
YouTube:// SeigeEngineer
Twitter:// @ben_reinhardt
Quora:// Benjamin-Reinhardt

SKILLS

ATOMLAND
Several projects:
• Embedded hardware • Remote sensing • Machine Tools • Circuit Design • Prototyping
A few projects:
BITLAND
Several projects:
•MATLAB • Shell • Python
• LaTeX • C • Solidworks
A few projects:
• Java • C++ • Javascript
• CSS • HTML • ROS

PROJECTS

•Amphibious Robotics Competition
Ditch Day Adventure Hunt:
• Auto-collapsing concrete wall
•Reverse geocache box •12-ft ice climbing wall • Electric Palantir
•Full-sized Trojan Horse
•Staged a five minute single-take choreographed lightsaber battle

EXPERIENCE

NASA AMES | Guest Scientist, Intelligent Robotics Group
June 2014 – Aug 2014 | Mountain View, CA
I validated a novel robotic actuator with the ISS SPHERES engineering team
- Experiment hardware and software- design, fabrication, and operation
- Tracking system modifications to include hardware-in-the-loop control

June 2013 - August 2013 | Mountain View, CA
I was the controls engineer on a team building a zero-gravity testbed
- Controller design to translate force inputs to accurate zero-g dynamics
- Building automatic tests to adjust the system model and refine gains

NASA JPL | Technology Research Fellow, Robotics Group
June 2012 – Aug 2012 | Mountain View, CA
- Simulation and closed-loop control design for novel robotic actuator (induction couplers)
- Induction coupler force characterization experiments - instrumentation, execution, and analysis

CORNELL AND CALTECH | Engineering TA
Heat Transfer | June 2011-Aug 2011
I taught undergrads how to use differential equations to show how cold things become hot (and vice-versa.)
Mechanical Engineering Design and Fabrication | Apr 2009 - Jun 2009
I taught undergrads how to design and synthesize mechanical systems

AEROVIRONMENT INC. | Research Initiative Intern
June 2009 - Aug 2009 | Monrovia, CA
I worked with a team of interns doing proof-of concept for new tech
- Designed and built a photovoltaic rig for powering aquatic robots. Testing in lab and the open ocean required electronics, machining components, and field-debugging
- Measured and modeled the windflow over large buildings for a potential small-scale windfarm
- Performed thermal testing of UAV components

RESEARCH

CORNELL SPACE SYSTEMS DESIGN STUDIO | Graduate Research Student + Lab Manager
Aug 2010 – Present | Ithaca, NY
Designing, modeling, and implementing a novel EM actuator for orbital inspection
- Developed simulator to model and control the dynamics of an under-actuated robotic inspector from scratch
- Worked on fast algorithms to calculate eddy-current forces for dynamic simulations, rather than static analyses
- Led a team of masters and undergraduate students to build and characterize a low-cost low-friction test-bed

PUBLICATIONS

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