

Roberto O. Shu

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| CONTACT INFORMATION | 305 Ophelia St. Apt 202 Pittsburgh, Pa 15213 | (734) 355-8757 rshum@cmu.edu www.robertoshu.com |
| RESEARCH INTERESTS | Robotics, Controls, Highly Dynamical System, Legged Locomotion, Quad-rotors, Design | |
| EDUCATION | Carnegie Mellon University - Robotics Institute , Pittsburgh, PA M.S., Robotics, GPA: 4.0/4.3 Expected graduation: May 2016 Advisor: Assistant Professor Koushil Sreenath University of Michigan , Ann Arbor, MI B.S., Mechanical Engineering, Major GPA: 3.1/4.0 May 2014 Minor: Multidisciplinary Design Thesis : <i>Alignment Platform for Multilayer Soft Lithography</i> Advisor: Associate Professor Jianping Fu B.S., Aerospace Engineering, Major GPA: 3.4/4.0 May 2014 Minor: Mathematics Thesis: <i>Commercial Heavy-lift Orbital Refueling Depot CHORD</i> Advisor: Associate Professor James W. Cutler | |
| RESEARCH EXPERIENCE | Hybrid Dynamic Robotics Lab Nov 2014 – present Advisor: <i>Asst. Professor Koushil Sreenath</i> <ul style="list-style-type: none">• Prototyped human size robotic leg for a biped with active damping via M.R. damper and non liner compliance to withstand the high impact force of landing high jumps• Simulated mathematical model of proposed leg design in SimMechanics, and implemented quadratic programming to find optimum parameters, damping and joint profiles• Developing position control for Nano Quadcopter for later expansion into multi-agent control and created native Simulink client to communicate with hardware Biological Inspired Robotics And Dynamical Systems May 2013 – May 2014 Advisor: <i>Asst. Professor Shai Revzen</i> <ul style="list-style-type: none">• Designed, build, and controlled new generation of self-assembling modular robotics with expandable polyurethane foam <i>FoamBots</i>• Redesigned an autonomous foam reagents mixing device and peristaltic pump manufactured only with a laser cutter and assembles without screws or permanent joints Air Force Research Laboratory Aerospace Propulsion Outreach Program (APOP) Jan 2014 – May 2014 Advisor: <i>Dr. Timothy Smith</i> <ul style="list-style-type: none">• Designed and build a Turboprop add-on to harness the exhaust gas of an RC Jet engine to generate 500W of electrical power with minimum thrust lost• Characterized the RC Jet Engine exhaust static and stagnation pressure to estimate exit velocity, Mach number, and mass flow rate and determine the power turbine sizing requirements | |
| WORK EXPERIENCE | Information and Technology Services, U. of Michigan May 2012 – Sept 2012 <i>I.T. Consultant</i> <ul style="list-style-type: none">• Provided technical support to faculty, staff, and students during the transition out of U-M to M+Google accounts• Hosted tutorials on the new services and applications offered by M+Google accounts | |

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| PUBLICATIONS AND PRESENTATIONS | <ol style="list-style-type: none"> 1. Li, X., Geraldo, D., Weng, S., Alve, N., Dun, W., Kini, A., Patel, K., Shu, R., Zhang, F., Li, G., Jin, Q., Fu, J.. “Desktop aligner for fabrication of multilayer microfluidic devices.” <i>Review of Scientific Instruments</i> 86.7 (2015): 075008. 2. Shu, R., A. Siravuru, and K. Sreenath. “On the utility of active damping leg for safe landing from a free fall.” <i>Dynamic Walking Conference</i> (2015). |
| SCHOLARSHIPS, AWARDS AND MEDIA | <p>Student Awards — Carnegie Mellon University</p> <ul style="list-style-type: none"> • University of Excellence Scholarship for graduate studies (\$400,000) Jul 2014 <ul style="list-style-type: none"> • National Secretary of Higher Education, Science and Technology of Ecuador (SENESCYT) awards scholarships to Ecuadorian citizens pursuing higher education at the top universities of the world • Graduate Student Assembly/Provost Conference Funds (\$1000) Jul 2015 <p>Student Awards — University of Michigan</p> <ul style="list-style-type: none"> • University of Excellence Scholarship for undergraduate studies (\$130,000) Sep 2012 <ul style="list-style-type: none"> • 1st student to be awarded the scholarship • North Campus Dean’s Rev. Dr. Martin Luther King Jr. Spirit Award Feb 2014 • Stellar Multicultural Performance Award Jan 2013 • Undergraduate Achievement Award Jan 2012, 2013, 2014 • New student Achievement Award w/ Distinction Jan 2011 <p>Other Awards</p> <ul style="list-style-type: none"> • 1st place Case Study, National Institute for Leadership Advancement Aug 2012 • National Chapter of the Year (as President), SHPE Oct 2013 • Region 6 Chapter of the Year (as President), SHPE Oct 2013 • Blue Chip Award (as President), SHPE Apr 2013 |
| MEDIA | <p>Television</p> <ul style="list-style-type: none"> • CanalUno Noticiero UNO, aired in Ecuador. Sep 2015 <p>Online</p> <ul style="list-style-type: none"> • El Universo, nationwide newspaper in Ecuador Sep 2015 • BuzzFeed en Español Sep 2015 • MConneX May 2014 |
| OTHER ACTIVITIES | <ul style="list-style-type: none"> • Member, IEEE Robotics and Automation Society • Member, The Epians – Engineering Leadership Honor Society • Member, Society of Hispanic Professional Engineers, (University of Michigan Chapter President 2012-2013) • Aerodynamics Team Lead, Michigan Hybrid Racing 2013-2014 • High Altitude Balloons • Single-engine private pilot license [in progress] |
| HARDWARE AND SOFTWARE SKILLS | <p>Software:</p> <ul style="list-style-type: none"> • GNU/Linux, SolidWorks & SW Simulation, NX Unigraphics, Autodesk Inventor, XFlow <p>Programming:</p> <ul style="list-style-type: none"> • MATLAB/Simulink/SimMechanics, C++, C, Python, ROS, Bash <p>Hardware:</p> <ul style="list-style-type: none"> • OptiTrack Prime 17W, Dynamixels, CrazyFlie Quad-rotor, Frameless Brushless DC motors <p>Manufacturing:</p> <ul style="list-style-type: none"> • Mill, Lathe, CNC Router, Laser cutting, Composite material layup |

LANGUAGES

- Spanish (native speaker)
- English (bilingual proficiency)

REFERENCES

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