(323) 828-5911 **Philip H. DeZonia** pdezonia@gmail.com

Education

Robotics M.S. **GPA: 3.62**
University of Pennsylvania, December 2019
Mechanical Engineering, B.S. **GPA: 3.86**
UC San Diego, June 2016 Member of Phi Beta Kappa

Experience

Design Engineer – Applied Minds, Inc. Jun ’21 – Present
- Worked with electrical to design 3D printed helmet-mounted light emitter for army training exercises
- Used AutoDesk Inventor to design ramps for handicap subway turnstile for sheet metal fabrication
- Used Python and Open3D library to debug, calibrate, and test mmWave radar units allowing subway gates to close right after passengers

Mechanical Engineer – Naval Surface Warfare Center Philadelphia Division Jun ’20 – Jun ‘21
- Systematically tested control software for linear electric motor weapons elevators on next generation aircraft carriers both in virtual environments and aboard ship
- Automated part of test procedure generation process by writing a script in Visual Basic for Applications shortening the testing process by up to 2 weeks

Coop Software Engineer – Exyn Technologies Jan ’20 – Apr ‘20
- Assembled and setup hardware for retired drone platform by integrating it with new sensors and troubleshooting connection issues
- Worked in C++ to integrate an external VIO unit with company’s state estimation pipeline to verify the feasibility of developing miniaturized mapping drone, broadening the range of its applications

Research Assistant – GRASP Lab, University of Pennsylvania Aug ’17 – Dec ‘19
- Made MATLAB script to integrate microcontroller boats connected over wifi with motion capture system to test behavior of a swarm of interacting physical and virtual agents
- Used SolidWorks, 3D printers, and Arduino to build a modular boat robot capable of navigating in 2D with only one actuator; robot was used in experiments for a paper submitted to IROS
- Designed and fabricated waldo and created scripts in ROS to enable team to quickly create a library of lifelike motions for a full-scale humanoid robot to interact with patrons at a museum
- Managed team of vision, hardware, and control specialists to deliver a humanoid robot a month before the original deadline

Intern – Research and Development, Pharmathek Oct ’16 – Jun ‘17
- Worked in Verona, Italy for a pharmacy automation company analyzing longevity of various parts of an automated pharmaceutical storage and retrieval machine.
- Designed a responsive web application, in HTML, CSS, and C# to interface with MySQL database to allow field workers to update part statuses when they do repairs

Intern – Robotics Systems Tech, Sandia National Labs Jun ’16 – Aug ‘16
- Independently created a miniature overhead gantry system for demonstrating swing free controllers
- Used SolidWorks to design an xy gantry with stationary motors and create drawings for custom parts
- Delivered completed system in eight weeks which was displayed at a conference

Researcher – Bioinspired Robotics and Design Lab, UCSD Jun ’15 – Jun ‘16
- Designed novel soft pneumatic actuator to be used in an untethered quadruped and a robotic gripper
- Used SolidWorks and 3D printer to create prototypes of various actuators to compare initial designs
- Designed, built, and programmed an automated testing device to measure performance of said actuator
- Built a robotic gripper with said actuators that could grasp various objects and screw in a light bulb

Publications

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1. G. Knizhnik, P. deZonia and M. Yim, "Pauses Provide Effective Control for an Underactuated Oscillating Swimming Robot," in IEEE Robotics and Automation Letters, vol. 5, no. 4, pp. 5075-5080, Oct. 2020, doi: 10.1109/LRA.2020.3005383.
2. Edwards, V., deZonia, P., Hsieh, M. A., Hindes, J., Triandaf, I., & Schwartz, I. B. (2020). Delay Induced Swarm Pattern Bifurcations in Mixed Reality Experiments. *arXiv preprint arXiv:2003.05986*.
3. Drotman, D., Jadhav, S., Karimi, M., deZonia, P. and Tolley, M. T. "3D printed soft actuators for a legged robot capable of navigating unstructured terrain." ICRA (2017).
4. Dezonia P., Drotman D., Tolley M. “Low-Cost Open-Source Mechanical Tester for Soft Robotics.” Robot Makers 2 Workshop, RSS (2016).
5. Delson, N., deZonia, P. and Wong, C. “Wall of Moments: A Hands-On Platform for Developing Intuitive Understanding of Moment Arms.” ASEE/PSW (2015).

Patents

Buckland, S., Chipps, J., Cohen, J., Coley, J., Davidson, M., deZonia, P., Fradin, N., Goldman, S., Havunjian, M., Losk, J., Nayak, N., Saleh, D., Wood, M. and Zappas, S. Desk with book holder. US 8136459 B2 (2012).

Projects

C++ Random Pronounceable Word Generator Jun ’19 – Oct ‘19

Personal

• Making program to generate lists of words that are pronounceable by chaining together syllable clusters. The library of clusters, their placement, and frequency allow for generation of words from distinct language styles

Quadrotor Obstacle Course Jan ’19 – May ‘19

Advanced Robotics Course Project, University of Pennsylvania

• Designed attitude controller, trajectory planner, and path planner to allow a crazyflie drone to navigate through an obstacle course for multiple start and goal positions

Python Space Video Game Feb ’17 – Jun ‘18

Personal

• Made a video game using the pygame library, from the ground up, designing all the graphics and managing all aspects of the game, game is physics based as well

Locomotion Monitoring System for Mouse Cognitive Studies Apr ’16 – Jun ‘16

Senior Design Project, UC San Diego

• Worked as part of a 4 person team to design and build two experimental setups, for studying the brains of walking mice, that each met their respective lab’s needs, winning the ASME Best Project Award

• Used design and project management principles to deliver, on time, a system with an air-suspended running track, a capacitive sensor for contact detection, and an automated liquid reward delivery system

Self-Balancing Robot Sep ’15 – Dec ‘15

Embedded Controls and Robotics Course Project, UC San Diego

• Designed lead-lag compensator with MATLAB to balance a mobile inverted pendulum. Developed complementary filter to provide sensory feedback of angular position.

• Implemented filter and controller as difference equations in C program on a Linux based microcontroller

Skills

Computer Skills: C/C++, Python, HTML, CSS, Git, MATLAB, MySQL, Unix, SolidWorks, AutoCAD, AutoDesk Inventor, Fusion 360, LabView, Microsoft Office, Adobe Photoshop

Tools and Equipment: Multimeter, laser cutter, mill, lathe, oscilloscope, soldering iron, band saw, 3D printer

Languages: Proficient in Spanish, Familiar with Japanese and Italian

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