Todd Roberts

(301) 769-8760 | todd_roberts@berkeley.edu | toddroberts.website

Local Address:
1808 San Pablo Ave, Unit C.
Berkeley, CA 94702

Permanent Address:
15620 Pt. Lookout Rd.
Saint Inigoes, MD 20684

Education

University of California, Berkeley, *Berkeley, CA* - M.E. in Mechanical Engineering **May 2020**

- **Focus:** Biomechanics
- **Relevant Courses:** Advanced Designing for the Human Body, Advanced Design and Automation

Northeastern University, *Boston, MA* - B.S. in Mechanical Engineering **May 2019**

- **Minor:** Biomechanical Engineering
- **GPA:** 3.911/4.000
- **Activities:** Enabling Engineering, "*Addditive"*, Engineers Without Borders: Uganda (2014-2015), American Society of Mechanical Engineers (ASME), NU Television (NUTV), Intramurals
- **Senior Capstone Design Project:**
    - *Advisor:* Professor Carol Livermore
    - *Industry Sponsor:* Lyndra Therapeutics
    - Designed an anatomically representative environment capable of simulating the digestive forces in a human stomach
    - Co-inventor on provisional patent filed by sponsor for work done on this project
    - Recipient of the Senior Capstone Design Award for Extra Mile

Westtown School, *Westchester, PA* **May 2014**

- Academic Distinction (2010 – 2014)

Honors and Awards

- Dean's List, Northeastern University **2014 – 2019**
- Merit Scholarship Recipient, Northeastern University **2014 – 2019**
- Tau Beta Pi, Engineering Honors Society **2018 – 2019**
- Pi Tau Sigma, Mechanical Engineering Honors Society **2018 – 2019**
- Extra Mile Award, Mechanical Engineering Capstone **2018**
- National Co-op Student of the Year Finalist, CEED **2019**
- COE Outstanding Co-op award, Northeastern University **2019**
- Society of Flight Test Engineers Scholarship **2016, 2018**

Professional Experience

Lyndra Therapeutics, *Watertown, MA* – Mechanical Engineering Consultant **February – August 2019**

- Continued support of simulated stomach environment development including fatigue life and general mechanical design improvements
- Designed mechanical test fixtures for fatigue analysis of ultra-long-lasting oral dosage forms
- Standardized current mechanical characterization fixtures to increase repeatability of testing
- Developed environmental chamber to allow testing at accurate gastro temperature and humidity

Liberating Technologies Inc, *Holliston, MA* – Research Engineer Co-op **January - July 2018**

- Developed unilateral control mechanism for novel multi-function prosthetic fingertip gripper. Co-inventor on US Provisional Pat. Ser. No. 62/570, 184
- Prototyped mechanical components with SolidWorks, 3D printing, and machine tools
- Designed substrate and overmold for casting urethane grip onto prosthetic finger

Todd Roberts

(301) 769-8760 | todd_roberts@berkeley.edu | toddroberts.website

Local Address:
1808 San Pablo Ave, Unit C.
Berkeley, CA 94702

Permanent Address:
15620 Pt. Lookout Rd.
Saint Inigoes, MD 20684

- Used ergonomic data to design electro-mechanical prosthetic simulator
- Conducted human subject testing to evaluate functional outcomes of new prosthesis
- Wrote C++ code to control prosthetic simulator with myoelectric inputs
- Presented weekly design progress to internal stakeholders

Tesla Inc, *Fremont, CA* – Dimensional Engineering Co-op **January - July 2017**

Supported the Model 3 launch by co-leading dimensional studies on the "Quality Assurance Fixture" which drove quality improvements in early production parts and assembly processes

- Devised and conducted studies based on requests from design and manufacturing engineers to root cause part and assembly level dimensional issues
- Created and analyzed dimensional reports and led subsequent reviews with management
- Developed datum strategies for test and assembly fixtures based on experimental results
- Designed and fabricated test equipment using CATIA, 3D printing, and local machine shops
- Managed daily responsibilities of 3 – 5 metrology technicians and measurement resources
- Provided real time solutions to assembly line issues based on current dimensional data
- Collected data using traditional and portable Coordinate Measuring Machines (CMM's)
- Evaluated Geometric Dimensioning and Tolerancing accuracy of third party supplier parts

DOTS Corp, *Natick, MA* – Mechanical Engineering Co-op **January - July 2016**

- Worked in high paced, research and development phase, consumer product start-up
- Designed and constructed multiple iterations of assembly and test fixtures using SolidWorks, shop tools, 3D Printers and Thor Labs prototyping hardware
- Collaborated with machinists, plating shops, and other vendors to fabricate custom parts
- Designed and conducted experiments and performed statistical data analysis
- Captured high resolution images for detailed optical analysis and observations

NAVAIR, *Webster Field, MD* – Engineering Student Trainee **June - August 2015**

- Wrote and submitted shock and vibration test procedures to MIL-STDS - 901D and 167-1A
- Created technical trouble shooting documents for *Microsoft Windows Server 2008 R2*
- Field tested and documented standard operating procedure of *Blue Sky* Antenna Mast
- Assembled products and shipped them to test facilities and troops overseas

Research Experience

Expeditionary Robotics Lab, *Boston, MA* – Independent Undergraduate Research **January – May 2019**

- Developed kinematically accurate hand for testing mechanical properties of hand orthosis
- Designed artificial ligaments and identified insertion sites for representative joint range of motion
- Designed artificial tendons for manual and automated actuation of hand

ReGame-VR Laboratory, *Boston, MA* – Undergraduate Research Assistant **September 2016 – May 2019**

- Designed and constructed custom mechanical components for physical and cognitive therapy equipment
- Developed multiple iterations of a portable rehabilitation game system
- Collaborated with electrical engineers to successfully integrate electromechanical systems
- Paper submission in preparation for the International Conference of Virtual Rehabilitation, July 2019

Todd Roberts

(301) 769-8760 | todd_roberts@berkeley.edu | toddroberts.website

Local Address:
1808 San Pablo Ave, Unit C.
Berkeley, CA 94702

Permanent Address:
15620 Pt. Lookout Rd.
Saint Inigoes, MD 20684

Leadership & Volunteer Experience

Enabling Engineering, *Boston, MA* – Project Leader **January 2016 – May 2019**

- Created customized head-operated Xbox controller for a student with cerebral palsy
- Organized group meetings and communicate with other student groups
- Filmed and edited interviews of all enabling group project teams for fundraising and promotions

Addditive, Boston, MA – Curriculum Development Co-lead **July 2018 – August 2019**

- Mentoring local high school students about opportunities in STEM and higher education
- Developed new relationship with Dearborn STEM Academy Highschool
- Created curriculum for 25 student weekly class about engineering design and 3D printing

Software & Machining Skills

- Applications: SolidWorks: *CSWA Certified*, CATIA V5, LabVIEW, MATLAB, C++, Adobe CC, Python, OpenSim
- Machining: Significant experience with 3-axis mill, lathe, rotary tools, and soldering equipment. Extensive wood working and aluminum experience: built cabinets, chairs, custom skateboards, and dock restoration.
- Additional Fabrication: Silicone and urethane casting and mold design. Additive manufacturing: SLA, SLS, and FDM. Basic knowledge of welding.

Patents

- *Co-inventor*: "Pointdexter: Dexterous Prosthetic Fingertips", Inventor: Martinez Luna et al US Provisional Pat. Ser.No. 62/570,184, filed 2017-10-10
- *Co-inventor:* "Stomach Simulating Device", Inventor: Kanasty et al US Provisional Pat. Ser.No. 62/774,802, filed 2018-12-03

Background and Interests

- My greatest passion is empowering individuals with disabilities or alternative needs by bringing new levels of independence to their lives through development of assistive technology
- Designed and built personal film equipment including a stabilizer, dolly, and camera crane
- Videography, Screen Printing, Skateboarding, Snowboarding, Sailing, and Soccer