


Franklin Tarke

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Education

MS | Stanford University

Mechanical Engineering | '20

- GPA: 3.97
- Focus Depths: Product Design, Biomechanics, Mechatronics
- Club Ski & Snowboard

ScB | Brown University

Mechanical Engineering | '18

- GPA: 3.87
- Graduated with Honors
- Engineering Teaching Assistant
- Club Baseball Captain

Skills

Software & Programming

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|------------|------------------|
| Solidworks | Creo |
| Abaqus CAE | MATLAB |
| Python | C++ |
| Arduino | Raspberry Pi |
| LabVIEW | Microsoft Office |

Manufacturing

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|--------------|------------------|
| Mill/Lathe | MIG/TIG Welding |
| Wood Working | Metal Working |
| 3D Printing | Silicone Molding |

Lab & Imaging

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|--------------------|----------------|
| Mechanical Testing | Fixture Design |
| Histology | Dissection |
| Small Animal | Cadaver |
| Motion Capture | Logger Pro |
| Calibration | Registration |
| CT/MR Imaging | Segmentation |

Coursework

Mechatronics & Medical Robotics
Design & Manufacturing
Instrumentation Design
Solid Mechanics & Materials
Biomechanics of Movement
Orthopaedic Bioengineering
Practical Sports Medicine
Technology Venture Formation

Awards

Tau Beta Pi
Brown Hack Health 2018 1st Place
Brown Univ. Halpin Senior
Capstone Prize
2014 California Northern Section
Scholar-Athlete of the Year
California Scholarship Federation
Highest Honor

Work Experience

NuVasive - Surgical Intelligence | Development Engineer Intern

San Diego, CA | June 2019 - Present

- **R&D:** Develop & test components for the camera in the Pulse Surgical Navigation platform
- **User-Centered Design:** Utilized user-centered design techniques to develop concepts and prototypes for a tablet mount in the operating room for use by the C-arm Tech
- **V&V:** Performed test protocols and wrote test reports for Pulse design change releases

U.S. FDA - Div. of Applied Mechanics | Engineering Research Fellow

Silver Spring, MD | Summer 2017

- **Spinal Devices:** Performed static & fatigue tests on pediatric spinal devices using mechanical testing systems. Analyzed mechanical testing and finite element model validation data
- **Experiment Design:** Designed custom test fixtures using computer-aided design software
- **Cadaver Testing:** Performed load induced subsidence testing on cadaver vertebrae and synthetic bone blocks using intervertebral body fusion devices

Rhode Island Hospital - Dept. of Orthopaedics | Undergrad Research Engineer

Providence, RI | September 2016 - May 2018

- **Summary:** Analyzed kinematics of the human knee joint using x-ray bi-planar video radiography coupled with force plate, motion tracking, & EMG equipment in a clinical study comparing healthy & surgically repaired knees
- **Joint Kinematics:** Compared the model, observer, & bone effects on derived joint kinematics using MATLAB when using bi-planer x-ray video tracking software
- **Thesis:** Wrote and Presented Senior Thesis on the "*Sensitivity of 3D knee joint kinematics calculated from CT and MRI derived bone models*"

UC Davis - Dept. of Orthopaedic Surgery | Research Intern

Davis, CA | Summers 2015 and 2016

- **Independent Project:** Tested and analyzed a new mouse tibial compression model for inducing osteoarthritis in knee joint. Wrote and presented abstract at 2017 Orthopaedic Research Society Annual Meeting
- **Collaborator:** Compared formation of fracture callus to osteophytes in mice; Studied effects of hind limb unloading in rats; Measured osteophyte formation in mice with ACL injury

Enterprise Farms | Farm Laborer

Meridian, CA | Summers of '08-'10, '14-'16, '18

- **Design & Repair:** Built and repaired parts for bean harrows and cultivators. Adjusted equipment designs, fabricated new pieces, and repaired existing equipment
- **Equipment:** Operated and serviced tractors, pumps, & other equipment; set up motorized wheel irrigation systems
- **Orchards:** Fertilized, irrigated, pruned, and trained trees in walnut and almond orchards

Projects

ME310 Design Innovation | Resilio: Empowering Communities

- Designed and built a system to enable communication for a minimum of 7 days - following an outage of power and cellular infrastructure due to a natural disaster
- Programmed LoRa Radio microcontrollers to implement mesh network functionality, handle user input, and communicate with iOS mobile application over BLE. Circuit & enclosure design
- Collaborated with SAAB: Defense & Security and Swedish partners (Linkopings University)

DiPoles | Custom Ski Poles with Magnetic Straps

- Designed and manufactured custom ski poles that feature magnetic releasing wrist straps for both ease of use and injury prevention

Koi Prosthetics | Senior Capstone

- Designed prototypes for a low cost prosthetic knee and adjustable socket for amputees in developing countries. Performed research, worked with mentors in the prosthetic industry, developed concepts & initial prototypes