Mihir Shevgaonkar

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Education

University of California, Santa Barbara **September 2017 - June 2021**
B.S. Electrical Engineering, 3.67/4.00

Work Experience

Rotor Technologies **October 2021 - Present**
Associate Engineer, Artificial Systems

- Working on high performance distributed computing system for remotely piloted helicopters
- Helping architect onboard communication & control infrastructure, optimizing for latency, robustness, and scalability
- Collaborating on development of C++ drivers for various embedded functions, including ADC, UART, SPI, and CAN
- Next steps include implementing real time constraints, automatic control, and wireless communications

Tesla **June 2020 - September 2020**
Thermal Integration Intern

- Built up software infrastructure for automated testing of Tesla Semi thermal systems, preventing 1yr delay
- Designed component level tests (fans, compressors, pumps) to prepare for more complex tests
- Utilized Jenkins for test automation, CAN+UDS comms protocols, and internal OOP python test frameworks

CTRL-labs (now Facebook Reality Labs) **June 2019 - September 2019**
Hardware Engineering Intern

- Worked on analog front-end(AFE) of electromyography armband that converts motor neuron spikes to hand gestures
- Proposed & executed AFE amplifier biasing changes, resulting in 1/3 space & power reductions
- Investigated effect of oversampling on spike waveforms, caught and helped resolve very deep bug in SPI driver

Project Experience

Ionic Skies - see ionicskies.com **March 2020 - June 2021**
Team Lead

- Started and led 14 person interdisciplinary senior capstone team to build first ever fully controllable ionic wind aircraft
- Validated active control of aircraft in glide tests, functional control surfaces when thrusters on, and power converter driving ionic thrusters that generated 120g (60%) thrust at 34kV
- But, ran out of time before we could fly the airplane
- Led design and development of thrusters and power converter, managed integration with airframe and launcher
- Owner of DC-DC power converter development - 3 stage inverter, transformer, multiplier circuit that successfully converts 180Vin to 40kVout, 550W, and 78% efficiency
- Team won $6000 grand prize for best multidisciplinary capstone project
- Presented work in October '21 to Dr. Steven Barrett & Lab for Aviation and the Environment, MIT, inventors of fixed wing ionic wind aircraft

Ball Balancing Robot (BB-9) - see mihir.space **2019 - 2020**
Personal Project

- Designed & built robot that balances on a single spherical wheel
- Utilized simple control system based on complimentary filtering of IMU, then linear PID control in 3 axes
- Explored state representation in various coordinate systems, Kalman filtering, and writing embedded drivers

UCSB Rocket Propulsion Laboratory **October 2018 - June 2019**
Marketing Lead

- Founding member of large rocket team participating in FAR MARS 2020 competition
- Designed multiple iterations of RPL website, collaborated with artist to design cohesive logo
- Helped coordinate sources of funding from ECE from previous years

Project Experience, cont.

UCSB Hyperloop **October 2017 - July 2018**
Electrical Engineer

- Selected all components for onboard power distribution system, built and tested battery and power systems
- Part of 12 person team that won levitation sub-comp at 2018 SpaceX Hyperloop competition

Other Activities

New Venture Competition - Solaris **October 2020 - May 2021**
Team Lead ("CEO")

- Stared Solaris as a sister project to Ionic Skies, inspired by Solar Impulse and atklantiksolar
- Idea: fixed wing solar drone flies for days and nights without landing, collects high res data of farms, generates agricultural insights
- Team performed extensive customer discovery, meeting with farmers from Santa Barbara and Santa Maria regions
- Made NVC finals (top 5 out of ~40 teams), won honorable mention and $2500
- Did not go through with idea after realizing lack of competitiveness with drone-in-a-box systems

Skills & Coursework

Selected Coursework

- Linear Systems (Graduate)
- Motion Planning
- Convex Optimization
- Digital Signal Processing
- Classical Computer Vision
- Nonlinear Dynamics
- Analog Electronics

Skills

- Languages: C++, Python, Matlab
- Tools (Software): Vim, Bash, Git
- Tools (Hardware): Kicad, Eagle, Solidworks
- Tools (Display): LaTeX, Markdown, HTML/CSS