

# Siddharth Kurwa

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## EDUCATION

### B.S., Mechanical Engineering with Highest Honors, GPA: 3.97/4.00

Dec 2018

- Bridges to the Future Credential Program: Design and Manufacturing Track
- Cockrell School of Engineering, The University of Texas at Austin

## EXPERIENCE

### Associate Equipment Automation Engineer, Tesla

Feb 2019 - Present

- Generated material and labor savings of approximately \$600,000/year by conceiving 5 automation process improvements, programming in PLC, and analyzing production floor data to measure value-add
- Analyzed overall equipment effectiveness (OEE) data, presented in weekly team reviews, and coordinated team effort to tackle production limiters
- Provided automation equipment support to solve time-critical production issues involving process logic and state machine sequencing, sensors, programmable logic controllers (PLCs), and IO modules

### Engineering Intern, M3 Design

May 2018 - Dec 2018

- Prototyped medical device control system by developing an Arduino-based hierarchical state machine, integrating 3 sensors, 4 DC motors, and 1 OLED display, and collaborating with mechanical and industrial design teams to meet specifications
- Designed RC charge/discharge circuit for ball-pitching prototype by determining electrical load to size circuit components, programming Arduino IO logic, and building electronics enclosure
- Designed 1 sheet metal bracket in Creo, analyzed stiffness using Pro/ENGINEER Mechanica FEA, and coordinated procurement from sheet metal shop
- Designed and fabricated 4 wooden and 3D-printed fixtures and alignment tools for prototype assembly

### Launch Intern, SpaceX

Aug 2017 - Dec 2017

- Developed 2 Excel models to calculate Crew Dragon ocean recovery loads and interferences, designed and analyzed 4 parts with Siemens NX and ANSYS FEA analysis, worked with 7 suppliers to fabricate components, drafted ocean recovery procedure, and executed 3 offshore operational tests
- Designed custom tool used in March 2019 Crew Dragon Demo-1 ocean recovery mission, presented preliminary design review, and coordinated critical design and timeline with international manufacturer

### Robotics Intern, Applied Materials

Oct 2016 - Aug 2017

- Reduced cost of silicon wafer lift on test stands from \$3,000 to under \$500 by designing assembly in Solidworks, 3D-printing parts, assembling, and cycle-testing in 1-month schedule
- Characterized robot repeatability, thermal/mass deflection, and vibration specs by building 4 test stands, performing 4 experiments, and automating analyses with 1 Python and 3 MATLAB scripts

### Student Assistant, Texas Inventionworks

Oct 2014 - May 2015

- Conducted 15+ laser-cutting and 3D-printer equipment training sessions, troubleshooted 3D-printers, and supported safe and appropriate student usage of maker studio equipment
- Presented 10+ introductory facility tours to new students and university visitors

## PATENTS

West L.; Gentry K.; Kurwa, S.; "Actuated Soft-Toss Ball-Pitching Mechanism and Feeder" 2019, U.S. Patent App. No. 82/822,624 filed March, 22, 2019. Patent Pending.

## PROJECTS

### Smart Cart, ME 377K Independent Research Project

Aug 2018 - Dec 2018

- Submitted project proposal, scheduled regular update meetings with advisor (Dr. Carolyn Seepersad), and presented poster and final paper in University of Texas Mechanical Engineering Poster Competition

- Developed control system architecture to perform obstacle avoidance using 3 I<sup>2</sup>C-networked Arduino microcontrollers, 2 encoders, 1 gyroscope, and 5 ultrasonic proximity sensors
- Selected mechanical components and battery by analyzing power distribution (motor sizing and gear ratios), structural loading, and driveshaft bending in 1 Excel model
- Designed SolidWorks assembly and prototyped with 3D-printer, machine shop, and soldering equipment

**Low-Cost Menstrual Pad Fabrication Device, ME 266K Senior Design Capstone** **Aug 2018 - Dec 2018**

- Led team of 4 students to ideate, design, and prototype low-cost menstrual pad fabrication devices for the Red Cross to deploy in Syrian refugee camps in the Middle East
- Managed unique expectations of project advisors (Dr. Janet Ellzey and Dr. Katherine Polston), Red Cross leadership, course instructor (Dr. Richard Crawford), and deployment team by hosting weekly stakeholder-centric meetings
- Owned thermal and electrical subsystem design, analysis, and prototyping while contributing to structural designs through concept generation, critical design feedback, and prototyping
- Device prototype has been used to fabricate 500+ menstrual pads at less than \$0.12/unit in Beirut refugee camp during June 2019 deployment trials

**CamSketch, ME 350R Robot Mechanism Design** **Jan 2018 - May 2018**

- Led team of 3 students to design and prototype a 1-DOF planar mechanism to sketch an image outline using double cam-follower design and pantograph mechanism
- Developed 1 MATLAB function to take image file input, determine image outline, and output cam profile arrays required to sketch image
- Spearheaded prototype iteration to improve mechanical performance through linkage redesigns in SolidWorks and bearing selection

**VeganEgg Scrambler, ME 366K Senior Design Introduction** **Jan 2018 - May 2018**

- Led team of 6 students to conceive, design, and prototype a device that semi-autonomously scrambles “VeganEggs” using egg consistency and temperature feedback
- Owned Arduino-based control system architecture design and development, empirically derived a model to relate scrambling torque and cooking time to egg consistency using MATLAB, and implemented UI elements including pushbuttons, LCD display, and piezoelectric speakers in addition to fundamental motor control and sensor input
- Planned weekly progress meetings, managed Gantt chart and task delegation, and hosted design reviews to meet 5 major project deliverables on schedule and within \$300 budget

**Mechanical Design, University of Texas Solar Vehicles Team** **Sep 2015 - May 2016**

- Designed spindles to be 50% lighter by modeling and analyzing in SolidWorks, resolving geometric interferences with suspensions, and releasing part to vehicle assembly
- Modeled Ackermann steering geometry to meet competition turning requirements and procured off-the-shelf parts for assembly

**SERVICE**

**Co-Founder and Board Advisor, Jain Mentorship Program** **May 2017 - Present**

- Founded local community mentorship program to pair high school (HS) upperclassmen with college underclassmen for support and guidance through the college admissions process
- Provided mentorship to 31 HS students, curated monthly themes and mentorship content, and hosted 6+ webinars, Q&A sessions, and essay editing “office hours”

**Team Mentor, Cy-Fair High School HOSA Original Medical Innovation Competition** **Dec 2018 - Apr 2019**

- Mentored team of 3 9<sup>th</sup> grade students through concept generation, design, and prototype of an original

medical device through weekly progress meetings, feedback, and suggestions

- Team earned 2nd place in city-level competition and qualified for Texas state-level competition

## RECOGNITION

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|---|---------------------|
| ▪ Member, Tau Beta Pi Engineering Honor Society                       | May 2018 - Present  |
| ▪ Recipient, University Honors  | Aug 2014 - Dec 2018 |
| ▪ Recipient, Virginia and Ernest Cockrell Jr. Engineering Scholarship | Aug 2014 - Dec 2018 |
| ▪ Honoree, Distinguished College Scholar                              | May 2018            |
| ▪ Grand Prize Winner, athenahealth 'More Disruption Please' Hackathon | Apr 2017            |
| ▪ Recipient, Ford Blue Oval Scholarship                               | May 2016            |

## TOOLS

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- Design and Analysis: ANSYS, Creo, Siemens NX, SolidWorks
- Software: C++, Git, LabVIEW, Ladder Logic, MATLAB, Python
- Prototyping: 3D-printing, Arduino, Raspberry Pi, laser cutting, machine shop tools, surface mount soldering