

# Nickolas Powell

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## EDUCATION

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**University of California, Santa Barbara**

Expected June 2019

- B.S. Mechanical Engineering – Senior

## TECHNICAL SKILLS

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- Proficient in MATLAB, SolidWorks, Arduino, FEA, LaTeX, MS Office Suite
- Relevant Courses – Mechatronics, Fluid Mechanics, Vibrations, Thermodynamics, CAD

## ENGINEERING PROJECTS

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**RoboRats: Robotics Design of Mobile Robots**

July 2018

- Designed autonomous robots using Legos and two DC motors that utilized an Arduino controller and motor shield
- Equipped the robots with encoders to travel variable distances and photo resistors to start and stop with external lights
- Each robot was able to detect walls/objects with short/long range IR sensors and follow a visual line installed on the floor with reflectance sensors
- Each sensor implemented could be calibrated on the spot using Arduino code for use in different environments
- Robots were programmed to seek out foam blocks and store them within the chassis using two servo arms

**Automatic Whiteboard Eraser Design Project**

June 2018

- Worked with a team of five to design a mechanism that can erase a whiteboard with the press of a singular button
- Each component was designed in SolidWorks and machined to the specifications of the white board
- Designed a Duel-H bridge circuit to power two DC motors simultaneously in forward and reverse directions
- Used an Arduino microcontroller to program the movements of the mechanism and control each DC motor
- Created a unique pulley system to drive the erasing arm across the board to clean the surface efficiently with each pass

**UCSB Formula SAE**

April 2018

- Designed and manufactured a Formula level race car with a team to compete against other universities
- Assisted with upright wheel assembly and suspension system to connect steering arms and shock absorbers to axles

**Single Piston Pneumatic Motor**

May 2017

- Machined each part within tolerance to allow the motor to exceed 3200 RPM
- Conducted SolidWorks stress analysis simulations to analyze the motor design assembly to avoid breaking and deformation
- Utilized lathes, band saws, and drill presses to fabricate the single-stroke air motor

**Engineering Graphics Competition Team Leader: Sketching, CAD and Conceptual Design**

June 2016

- Led a team of four to design, draft, and manufacture a robot that could utilize two different gearboxes and servo motors
- Programmed the robots using an Arduino interface to sync the robot's movements to dance with music
- Drafted and designed each robot part to be laser cut during the manufacturing process using SolidWorks
- Earned first place by popular vote among competing teams during the final design showcase

## EXTRACURRICULAR ACTIVITIES

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**American Society of Mechanical Engineers**

Fall 2015-Present

- Attend biweekly meetings focused on building an engineering community on campus
- Coordinate with other members to host workshops that assist students and promote guest speakers

**UCSB Machine Shop Club**

Fall 2017-Present

- Collaborate and assist with other club members on personal machining projects
- Organize club members to work together on mechanical designs each quarter

**UCSB League of Legends Collegiate League Team Manager**

Winter 2016-Present

- Operate as the team manager to schedule team meetings and scrimmages with other universities
- Work with 5 players to enhance team cohesion and compete in the University League of Legends Tournament for the opportunity to earn scholarship money