

TARUN SUBRAMANIAN

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EDUCATION

Northwestern University – The Graduate School
Master of Science in Mechanical Engineering

September 2017 – December 2018
CGPA: 3.913/4

Anna University – SSN College of Engineering
Bachelor of Engineering in Mechanical Engineering

July 2013 – June 2017
CGPA: 3.9/4

SKILLS

SolidWorks, Fusion 360, EAGLE (MCad-ECad Integration), MATLAB, Mathematica, CCS Cloud, Atmel Studio, GitHub

EXPERIENCE

Mechatronics Engineer, PedalCell, USA

June 2018 – Present

- Developed and designed the power filtering electronics & energy storage architecture which processes the fluctuating electricity obtained from the bicycle into a stable stream.
- Built a software which determines the proper method to deliver power based on the output device's peak & standby energy needs.
- Created a fully automated testing rig and software using Matlab which simulates various riding behavior. This is used to stress test and validate the product.

Graduate Student Researcher, NxR Lab, Northwestern University, USA

October 2017 – Present

- Captured the impulse response of the natural materials that vary in their frequency response by using a piezoelectric plate.
- Added these responses obtained with a square wave friction profile and then display this convoluted signal on a friction modulation device.
- Identified and varied the parameters of these signals by which we could map natural texture on a electrostatic friction modulation device.

Summer Research Intern, Indian Institute of Technology, Kanpur, India

June 2016 – August 2016

Design of De-Spinning Mechanisms for Dual Spin Ballistic Projectiles

- Analytically derived 6 D.O.F dynamic model to predict altitude, range trajectory of projectile on MATLAB.
- Canard was designed on SolidWorks based on roll-moment requirement for various velocities of the projectile and Roll isolation bearing was selected based on axial and thrust loads

PROJECTS

Autonomous Mobile Robot, Northwestern University, USA

March 2018 – May 2018

- Constructed and assembled a three wheeled robot in which the motors where controlled by a PIC32 microcontroller. The robot was fabricated using acrylic sheets which was laser cut and 3d printing.
- An android application was developed which is used to detect the line on the map and exchanges information via USB CDC with the PIC32 microcontroller which in turn controls the motor.

Webcam Design, Northwestern University, USA

January 2018 – March 2018

- Created a wireless webcam which included sourcing components, designing the PCB (Footprint design, signal routing) to soldering it.
- This Webcam features an Atmel SAMS48B microcontroller, AMW136 Zentri Wi-Fi Chip and Omni vision OV2640 camera which communicated through UART and SPI protocol.
- In addition to designing the webcam, a website was made, and a 3D printed enclosure was fabricated.

Motor Control, Northwestern University, USA

January 2018 – March 2018

- Developed a position controller using PID algorithm for a Motor to follow a desired trajectory which is given by the user.
- The hardware consists of a PIC32 microcontroller, MAX9918 current sensor and DRV8835 H-Bridge.
- A simple user interface was created using MATLAB which provides the user with 15 options: from reading the encoder values, setting current and position gains to plotting trajectories.

Design and Fabrication of Go-Kart, Go-Kart Design Challenge 2016 (GKDC), India

April 2015 - February 2016

- Modeled the chassis of the Go Kart using SolidWorks.
- Developed an auto engine cutoff system which was modeled to cut off the engine should a failure occur in the breaks.
- Go-kart was placed 16th overall and 3rd in Handling Tests in GKDC.

PUBLICATION

'Wood Plastic Composite', National Conference for Mechanical Engineering Research Scholars

31st March, 2017

- Developed WPC from waste pine wood flour compounded with Polypropylene and talc powder
- Characterized the mechanical properties of the material. Aimed at developing a material feasible for 3D printing.
- Recipient of the SSN student research grant (March 2015), at SSNCE, Chennai