

TARUN SUBRAMANIAN

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EDUCATION

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

September 2017 – December 2018
CGPA: 3.94/4

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 – August 2018, February 2019 - Present

- Designed a fully automated testing rig which simulates various riding behavior and developed testing protocols which is used to stress test and validate the product.
- Developed and designed the power filtering electronics & energy storage architecture which processes the fluctuating electricity obtained from the bicycle into a steady and continuous stream of power.
- Participated in the product development which included implementing and testing new design solutions, publishing engineering reports and analyzing existing development or manufacturing procedures and suggesting improvements.

Graduate Student Researcher, NxR Lab, Northwestern University, USA

October 2017 – December 2018

- 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 displayed these convoluted signals on an electrostatic friction modulation device.
- Conducted psychophysical experiments to identify the key parameters of the convoluted signals by which we could map natural texture on an 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 were controlled by a PIC32 microcontroller. The robot was fabricated using acrylic sheets which were 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.

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