Suraj Kumar Raja Ratnam

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EDUCATION

Purdue University, West Lafayette, IN **May 2022**
Bachelor of Science in Mechanical Engineering and Mathematics Minor
Coursework: Digital Controls, Machine Design, CAD/CAM, Heat & Mass Transfer, Fluid Mechanics, Partial Differential Eqns Mechatronics

SKILLS

Programming Languages: MATLAB/Simulink, C, C++, Python, ROS framework, PostgreSQL, LabVIEW, Arduino
Engineering Software: Siemens NX 12.0, Solidworks, Autodesk Fusion 360, CATIA, ANSYS Mechanical, COMSOL
Linguistics: English (F), Malay (F), Tamil (Native), Indonesian (Proficient)

RESEARCH EXPERIENCE

Thermal Engineer **Sep 2021 – Present**
Specere Labs - Birck Nanotechnology Center - West Lafayette, IN
- Computationally analyzing stacks of metamaterial using the COMSOL optics modules
- Applying solid-state physics concepts to analyze the thermal conductivity of phonons and polaritons

Robotics Engineer **Jun 2021 – Aug 2021**
ME Summer Projects - Mahmoudian Labs - West Lafayette, IN
- Designed a robust weight attachment and adjustment system made of corrosion-resistant materials for the ROUGHIE
- Developed a differential thrust management system to ensure an autonomous catamaran operates for 12 hours

Manufacturing Engineer **Jan 2021 – Aug 2021**
RODETUR Project, Zucrow Labs - West Lafayette, IN
- Manufactured a turbocharger manifold from a stock of SS 304 metal at the BIDC, also designing the CAM to be implemented on the HAAS VF-2 mill
- Constructed a test stand rig to suspend a 70 lb turbocharger modularly, to be integrated into the RODETUR experiment
- Sourced for control valves which operate at 450 °F and 5 bar, for integration of a turbocharger into a larger system

Algorithm Engineer **Jun 2020 – Aug 2020**
ME Summer Projects - West Lafayette, IN
- Implemented Hull transforms to compute number of bacterial colonies in a picture of a petri dish
- Investigated using a novel concept of splitting eccentric clumps of bacterial colonies in an image into 4 to measure an accurate count of colonies

ENGINEERING EXPERIENCE

Product Design Engineer **Jan 2020 – May 2020**
Mechanical Engineering Design, Innovation, and Entrepreneurship - West Lafayette, IN
- Brainstormed with a team of 4 to generate unique ideas that resulted in a project to build a saran-wrap wrapping device
- Analyzed thermal properties of plastic, heat coils, and fans used in plastic wrapping devices to achieve optimal temp.
- Computed NPV, ROI, and BOM of proposed product to determine its feasibility
- Conceptualized a manufacturing process to synthesize door of product

Drivetrain Engineer **Jan 2020 – May 2020**
Formula SAE Purdue - West Lafayette, IN
- Produced a push bar for the club's competition car from first principles to give it multiple functions

LEADERSHIP EXPERIENCE

Co-founder and Treasurer **Jun 2021 – Present**
NeuroTech Society at Purdue
- Developing applications of engineering & technology in neuroscience and to participate in the NeuroTechX competition
- Acquired $4000 in funding from Purdue organizations for BCI software and tested EEG software for future projects

Team Lead - Power Technology **Aug 2021 – Dec 2021**
Power Engineering Society - IndyGo Project
- Managing 6 students to measure the degradation of bus batteries of IndyGo using data on multiple years worth of data

AWARDS

- **Fall 2020 Semester Honors**