Gungeet Singh

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Education

University of Illinois at Urbana-Champaign — **Aug 2021 - Dec 2022**
Master of Science in Aerospace Engineering — *Urbana-Champaign, Illinois*

Thapar Institute of Engineering and Technology — **Aug 2014 - July 2018**
Bachelor of Engineering in Mechatronics Engineering — *Patiala, India*

Technical Skills

Technologies: SolidWorks, Ansys, MATLAB, Proteus, Latex, Arduino, Android Studio, WordPress, Elementor
Languages: Bootstrap, JAVA, JavaScript, Python, HTML, C/C++, C#

Projects

Optimized Mission from Earth to Mars | *MATLAB, Python, Excel, Notepad*

- Formulated a mission to Mars using the **Artemis Gateway** over a live **dataset of 9 years from JPL Horizon System**.
- Implemented a **weighted function** to maximize the Mars exploration time and reduce the fuel consumption by designing a solver based on the principles of **Particle Swarm Optimization method**
- Developed a **caching solution** to handle **3B+ data points** hence increasing the overall **performance by 50%**

FEA on Heat Sink | *MATLAB*

- Designed a **heat sink** for the Intel Alder Lake LGA 1700 chip to dissipate a **temperature rise of upto 93°C**
- Analyzed **loading conditions** based on various combination of the **material**(Al & Cu) and **medium fluid** (air & water).
- Performed a **parametric sweep** over the **height** of heat sink to identify the **saturation** point of the heat dissipation in the corresponding sink.

Applied CFD | *ANSYS*

- Designed multiple versions of **CD Nozzle** to examine its performance in subsonic and supersonic conditions to identify a design with prominent **diamond shock** wave during transient response.
- Conducted a **steady analysis** on the symmetrical **NACA0012 airfoil** to assess lift-to-drag ratios across various angles of attack.

ArmBot | *SolidWorks, Arduino, CAM, Android, 3D-Print, RF Module, Bluetooth,*

- Built **3-way encoded RF wireless**, **gesture** controlled, **mobile** robotic arm with **modular end-effector** to grip and drill.
- Modified Mars rover's **rocker bogie arms**' design to build a Mobile base to maneuver over a rough terrain.
- Developed a **troubleshooting android application** to carry **health check status** of the ArmBot.

QuaBot | *SolidWorks, Arduino, Servo Motor*

- Designed a **chasis of an Amphibian Robot**, incorporating **electro-mechanical** components within a water-resistant enclosure, with additional feature of wheel fins to optimize **aquatic** maneuvering.
- Developed a radar system as a **safety mechanism**, capable of detecting obstacles located in the periphery of QuaBot.
- Performed Proteus simulation to test and validate the integration of relay control with the radar system.

Technical Experience

Tata Motors LTD. — **Jan 2017 – June 2017**
Research Intern — *Dharwad, India*

- Devised embedded system to **automate** the **manual transmission** of Trans Axle TA59 as a response to user feedback.
- Built **Automatic Kitting trolley** to carry the components to the assembly line following the concepts of **LFR**.
- Implemented **image processing** to identify part defect in the manufacturer plate with an **accuracy of 0.1mm**.
- Added quality improvements and **reduced lead time** by a factor of **60 minutes** by adding **Kaizens** as part of **JIDOKA** on the **assembly line**, led to increase in daily production from **90 to 103**.

Extra-Curricular

Certificates: Spaceflight Engineer | Star Project - Armbot | SolidWorks: Design for Mechatronics | Arduino: Prototyping | Embedded System and Robotics certification | Programming for Everybody (Getting Started with Python) | Training in SolidWorks

Community Involvement: Customer Service Assistant at Campus Recreational Outdoor – Rock Climbing | Deloitte's CSR - Underprivileged Education Program Volunteer |Core member of placement training council | Discipline team member in SATURNALIA and AAGHAZ 2015 (Cultural Events)