

Gungeet Singh

gungeet.s.arora@gmail.com | 2175502767 | linkedin.com/in/gungeet-singh | github.com/gungeet-singh

Education

University of Illinois at Urbana-Champaign

Master of Science in Aerospace Engineering

Aug 2021 - Dec 2022

Urbana-Champaign, Illinois

Thapar Institute of Engineering and Technology

Bachelor of Engineering in Mechatronics Engineering

Aug 2014 - July 2018

Patiala, India

Relevant Coursework

- Orbital Mechanics
- Optimal Aerospace Systems
- Optimal Space Trajectories
- Finite Element Analysis
- Nonlinear Aeroelasticity
- Applied CFD
- Embedded Systems
- Introduction to Nonlinear Dynamics & Vibrations

Work Experience

Campus Recreational Outdoor – Rock Climbing

Customer Service Assistant

Aug 2022 - Dec 2022

Champaign, Illinois

- Working as a Customer Support to provide an orientation, **top-rope belay certification** and **belaying** the climbers on ATCs and Gri-Gris along with working at cash register to lease out climbing and camping gear.
- **Identified** the hardware initialization issue in Fusion software for an effortless operation of cash register.
- **Optimized** the workplace storage and **organization** system, while supporting the training program for new CSAs.

Park Circle Technologies LLC

Web Developer Intern

June 2022 - Aug 2022

Short Hills, New Jersey

- **Designed and developed 31 new webpages** for **remodel** of fellowship program website thereby improving the overall website work flow by **introducing custom features** like glider carousel for video testimonies, secure directory access, adaptive questionnaire for alumni/lead capture, better visual data representation.
- **Enhanced** the **Content Management System** by scripting vanilla **bootstrap** code to design and integrate **UI/UX** components such as hero section, login functionality, edit profile section.
- Devised a **migration** strategy to move webpages from **Drupal 9** to **WordPress 6** and designed various web-templates using Elementor.

Shorthills Tech PVT. LTD.

Software Engineer I

Oct 2020 - Aug 2021

Gurgaon, India

- Responsible for **design and delivery of 4 projects** -
 - * Center for Neurorestoration and Neurotechnology
 - * Asian American Psychological Association
 - * New Hampshire Army National Guard USA
 - * Fort Stewart Hunter Army Airfield
- Created keyboard accessible webpages **compatible with screen readers** supporting multiple platforms.
- **Implementation, maintenance and performance testing** of visuals, texts and **accessibility features** such as contrast ratio, dynamic font sizing, keystroke focus, dyslexia friendly websites.

Deloitte USI

Business Technical Analyst

Aug 2018 - Nov 2019

Mumbai, India

- Developed an intranet news feed **android** application following **MVC design methodology** to **automate** sharing of information within **7 cross-functional teams**.
- **Created a new server** to fetch pictures and dynamically update content using **Picasso** library and JSON
- Handled **Client Request changes** ensuring **minimal issues post deployment**.
- **Independently** identified **32 critical bugs** using MAGI (Modified Adjusted Gross Income) methodology thus **fixed** the **complete Document Processing Module** for customer correspondence.
- **Awarded 2 spot awards** for outstanding performance in testing and delivery.

Tata Motors LTD.

Intern

Jan 2017 – June 2017

Dharwad, India

- Implemented **3 major** and **12 mini projects** as part of **JIDOKA** implementation
- Devised an embedded system to **automate** the **manual transmission** of Trans Axle TA59 as a response to user feedback.
- Built an **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** on the **assembly line**, led to increase in daily production from **90 to 103**.

Projects

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

Jan 2022 – May 2022

- Designed a mission to Mars using the Artemis Gateway in an ideal environment over a live **dataset of 9 years from JPL Horizon System**.
- Identified the **optimal launch window** to maximize the Mars exploration time and reduce the fuel consumption by designing a solver based on the principles of **Particle Swarm Optimization method**.
- Designed a **weighted function** and calculated the best optimized condition for a trade off between exploration time and fuel consumption and created a plot to **identify the weight ratio**.
- Developed a **caching solution** to handle **3B+ data points** hence increasing the overall **performance by 50%**

Optimal Thrust Control | *MATLAB*

Jan 2022 – May 2022

- Built an optimal thrust **bang-bang controller** for a transfer from Low Lunar Orbit to Higher Lunar Orbit, to manage traffic in lieu of Artemis mission.
- Used **MEE**(Modified Equinoctial Elements) instead of 6 orbital elements to create a robust solver and **reduced computing time by 10%**
- Used **Ode45** and **fsolve** with a **tolerance** limit of the order **1e-14 and 1e-9** respectively in Matlab to design the solver which follows the Runge-Kutta Dormand-Prince pair and least-squares algorithms to identify a unique solution.
- Performed a **parametric sweep** over various engines specification to identify the optimal thruster.

FEA on Heat Sink | *MATLAB*

Aug 2021 – Dec 2021

- Designed a **heat sink** for the Intel Alder Lake LGA 1700 chip to dissipate a **temperature rise of upto 93°C**
- Generated a **rectangular global element mesh** of sides 1mm to perform the FEA.
- Analyzed **loading conditions** based on various combination of the **material**(Al6061, Al6063 and Cu) and **medium fluid** (air and water) to identify the best combination.
- Performed a **parametric sweep** over the **height** of heat sink to identify the **saturation** point of the heat dissipation in the corresponding sink.

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

Aug 2017 – June 2018

- Built a **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.
- Designed an Arm sleeve with **flex sensors** and a Hand glove with **accelerometer** and **gyroscope** to control the arm and base with right arm and left hand gestures respectively.
- A **troubleshooting android application** to carry **health check status** of the armbot and verify the communication between the three Arduino's using **Bluetooth**.

Technical Skills

Languages

- | | | | |
|-------------|--------------|--------|---------|
| • Bootstrap | • JavaScript | • XML | • C/C++ |
| • JAVA | • Python | • HTML | • C# |

Technologies

- | | | | |
|--------------|-----------|------------------|------------------|
| • SolidWorks | • Latex | • Android Studio | • Elementor |
| • MATLAB | • Arduino | • WordPress | • WP Bakery Page |

Certifications

UIUC | *Graduate Certificates*

Aug 2021 – Present

- Spaceflight Engineering

TIET | *Undergrad Certificates*

Aug 2014 – July 2018

- Star Project for ArmBot
- Introduction to Python certification by University of Michigan *Coursera*
- Embedded System and Robotics certification by *i3indya*
- Training in SolidWorks by *Netmax*

EXTRA-CURRICULAR

- Core member of placement training council *TIET*
- Discipline team member in SATURNALIA and AAGHAZ 2015
- CBSE national north zonal Badminton tournament
- District Badminton Tournament *First runner-up*