Rahul Shagrithaya

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GitHub Profile | Engineering Portfolio Website

SKILLS

Software: Siemens NX, Autodesk Fusion 360, CATIA, Autodesk AutoCAD, Ansys Structural, Ansys Fluent
Manufacturing: Radial drilling, Dremel, composite lay-up, vacuum bagging, grinding, lathe, soldering
Programming: Python
Languages: English (Bilingual), Hindi (Native)

WORK EXPERIENCE

Research and development intern, CuriouzTech Lab, *Manipal Institute of Technology | Manipal, India* *August 2019 – December 2019*

- Collaborated with a professor to design a Special Endoscopic device to improve diagnosis of small visible tumours in bladders
- Studied and analysed already available endoscopic scissors and developed mechanisms for the new device
- Utilised Siemens NX to design CAD Models and developed high-quality images, videos, and illustrations in KeyShot
- Arrived at a novel surgical instrument which was patented in the Indian Patent Office

Research and development intern, *Cracow University of Technology | Kraków, Poland* *June 2019*

- Assisted a professor in the Malopolska Laboratory of Energy Efficient Building in designing a heat exchanger to reduce energy consumption
- Analysed a heat exchanger to transfer heat from hot kitchen air to cold water which would then be utilised in restrooms
- Used Autodesk Fusion 360 and Ansys to model and analyse basic heat transfer and fluid interactions
- Learnt about the latest research on the reduction of energy consumption

Structures Subsystem Engineer, *AeroMIT UAV Research Project Team | Manipal, India* *April 2018 – November 2019*

- Collaborated with an interdisciplinary team of 35 students divided into 5 subsystems researching on Unmanned Aerial Vehicles (UAV)
- Used Autodesk Fusion360 to design UAV structures and proposed optimised wing and fuselage structures to cut down weight and size
- Fabricated prototypes using composite lay-up, vacuum bagging, and laser cutting according to drafts sent by the aerodynamics subsystem
- Conducted strength, endurance, payload, flying, propeller and BLDC compatibility tests, and investigated crashes and malfunctions
- Created CAD templates for aircraft parts in AutoCAD that were sent for laser-cutting
- Designed a fixed-wing aircraft for SAE that can be assembled in less than 90 seconds and carry 1.5Kg of payload to disaster-struck locations
- Participated in regional aeromodelling competitions at IIT Bombay, NIT Surathkal, and NIT Calicut

PROGRAMMING PROJECTS

Planar Truss Element and One Dimensional Beam Element FEM Solver *December 2020 – February 2021*

- Coded a software to calculate displacements, slopes, and element stresses and strains of bars and beams subjected to forces, pressures, and moments
- Utilized Python and NumPy to assemble the global element stiffness, nodal displacement and force matrices, and solve the simultaneous equations
- Developed a user-friendly Graphical User Interface (GUI) using Dear PyGui to receive the problem data and display the solution in a plot and table
- Made the software an open-source project on GitHub

COVID-19 Desktop Tracker *April 2020*

- Programmed a stand-alone Windows software to retrieve and view COVID-19 related data using Python
- Utilised 3 Application Programming Interfaces (API) to request data such as total cases, deaths, recoveries, tests, and the latest news
- Used PyQt library to design a Graphic User Interface (GUI) and Matplotlib module to plot graphs

LEADERSHIP EXPERIENCE

Senior Structures Subsystem Engineer, *AeroMIT UAV Research Project Team | Manipal, India* *April 2019 – November 2019*

- Recruited competent undergraduate engineering students into AeroMIT Team
- Proctored and assessed written tests for the selection process of the junior subsystem members of the team
- Interviewed and finalised the members of the team
- Aided in organising the task-phase and induction programme

Category Organiser, *TechTathva SkyRush Event | Manipal, India* *October 2018*

- Hosted an unmanned aerial vehicle flying event in collaboration with Manipal Institute of Technology
- Managed and coordinated with the event participants to resolve disagreements
- Inspected participants' unmanned aircraft to ensure compliance with event regulations

ACHIEVEMENTS

- **Patent Granted** - Indian Patent Office, "A scissors-needle system for intra-cavitary hydro-dissection and excision of tissues", 201941051409
- **World Rank 5** in the SAE Aero Design East 2019 Collegiate Design Series hosted by Lockheed Martin in the micro-class category in Texas, USA
- **1st and 2nd Rank** in the Albatross Flying Competition 2018 at the National Institute of Technology in Calicut, India

EDUCATION

Manipal Institute of Technology | *Manipal, India* *July 2017 - May 2021*
Bachelor of Technology in **Mechanical Engineering**
Minor in ***Business Management***
Cumulative GPA: **8.15/10.0**