Shashank Kumar Sahu | **16D110024**
Mechanical Engineering | **Dual Degree (B.Tech. + M.Tech.)**
Indian Institute of Technology, Bombay | **Gender: Male**
Specialization: Computer Integrated Manufacturing | **DOB: 07-01-1999**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	

Awarded a **Branch Change** (**93** out of **900+** students) to **ME Dept.** on the basis of academic excellence in first year *['17]*

PROFESSIONAL EXPERIENCE

HILTI MANUFACTURING INDIA

R&D Intern [Cutting and grinding consumables Dept.]; Guide: Satyanarayan Ande, CTO *[May '19 – Jul '19]*

- Increased **tool life by 40%** with innovative design of **world's 1st** arranged diamond concrete grinding wheel
- Engineered a novel wheel on **SolidWorks**; incorporated cooling flutes & attained **41% mass reduction**
- Determined resonance characteristics of the wheel by constructing **Campbell Diagrams in ANSYS**
- Investigated thermal contraction of sintered segments to devise a model; **accelerating mold development**
- Substantiated manufacturing process by forming simulations using Maximum Strain failure criteria

POSITION OF RESPONSIBILITY

CHIEF MECHANICAL OFFICER, IIT BOMBAY RACING

Led a 3 tier team of 70+ students to build an electric race car to compete in FS (IMechE) *[May '19 - Jul '20]*

- Represented team in **FSUK '20** and ranked **1st in design finals** outperforming 73 teams from 21 countries
- Supervised the mechanical **design, manufacturing** and performance **testing** for E12, the race car for FS '20
- Spearheaded the **Suspension, Steering, Wheel Assembly** and **Vehicle Dynamics modeling** subsystems
- Generated **Full Car CAD** comprising of 10 subsystems & **1000+ components** ensuring seamless integration
- Monitored the allocation and expenditure of mechanical subsystem budget of over INR **1.5 million**
- Expedited the product development phase by **1 month**; employed **Gantt Charts** and **PLM software**

DESIGN ENGINEER, IIT BOMBAY RACING

Awarded 1st in Business Presentation & 2nd in Design at FSEV Concept Challenge, India *[May '17-* Apr *'19]*

- Partnered with **Wipro 3D** to deliver **12% weight reduction** of Uprights by **Additively Manufactured Lattice**
- Prototyped **In-Hub motor** assembly by mentoring a team of 6, for torque vectoring and enhanced control
- Aided in design of wheel center & center lock transitioning to **10" rim;** improving **acceleration time by 9%**

STUDENT MENTOR

Institute Student Mentorship Program (ISMP) *[Aug '20 - Present]*

- Selected out of **300+ applicants** after rigorous rounds of interviews, SOP and strong peer reviews
- Part of 108-member team, aiming to help freshmen with academics, extracurricular & personal challenges

TEACHING ASSISTANT

Engineering Data Mining and Applications *[Aug '20 - Present]*

- Collaborated with a team of 10 to manage weekly programming tasks, quizzes & exams of **200+ students**
- Mentored students in **Machine learning projects** & assisted the professor in managing online platforms

KEY PROJECTS

MODELING MICRO-MACHINING POROUS METAL

Master's Thesis | Guide: Prof. Soham Mujumdar *[May '20 - Present]*

- Analyzed **50+ research articles** to investigate **porosity characterization, damage, plasticity,** and **FEM**
- Formulated a mechanistic model to capture the forces, vibrations, locational error and surface attributes
- Validating the model by **micro-scale** cutting force measurement, surface characterization & **SEM** technique
- Establishing **optimum cutting** criteria by simulation-based parametric studies varying DoC, feed & velocity

DUAL AXIS ACCELEROMETER

MEMS – Design, Fabrication, and Characterisation | Course Project *[Jan '18 - May '18]*

- Designed a **MEMS** dual-axis capacitance-based accelerometer with a **footprint area of 4 mm square**
- Realized measurement range of **±15 g** & failure limit of 20 g**;** plotted displacement & frequency response

EMPLOYEE ATTRITION PREDICTION

Introduction to Machine Learning | Course Project *[Jan '20 - May '20]*

- Mapped top 5 root causes affecting employee prediction; **feature reduction by PCA** & tree-based classifier
- Achieved **89% accuracy** and **F1 score of 0.8** using Logistic Regression; top 15% on Kaggle Leadership

CERTIFICATION

SELF-DRIVING CARS

Advanced Level Specialization | University of Toronto, Coursera *[May '20 - Present]*

- Completing advanced courses on **State Estimation & Localization, Visual Perception & Motion Planning**
- Implemented **Stanley & PID** in **Python** for Lat. & Long. control in **CARLA** to navigate track with 1 m accuracy
- Gathered and refined data from **LIDAR, GNSS** & **IMU** & estimated vehicle parameters using **Kalman Filters**

EXTRACURRICULAR

SPORTS

- **Bagged 2 gold** medal in **State Level Silambam** (Martial-Arts) & participated in Nationals *['15]*
- Received a yearlong training under **NCC** and participated in the Republic Day Parade *['17]*

CULTURAL

- Secured 2nd position in Dance Mania and 5th in Gyrations, **Inter Hostel Group Dance** Championship *['16]*
- Enacted in 'Sunwai', a **theatrical play** securing 2nd spot in Main Dramatics GC for Hostel 4 *['18]*

SOCIAL WORK

- Volunteered for 'Swaach'- Juhu Beach clean-up with 500+ volunteers **collecting 1200+ kg of waste** *['17]*

TECH. SKILLS

MATLAB | PYTHON | C++ | SolidWorks | ANSYS | AutoCAD | COMSOL | Fusion 360 | MS Office | GrabCAD | CARLA

Scholastic achievements and extracurricular activities are not verified by the Placement Cell