


# Saurabh Mudgal

Software Engineer

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*Fascinated by data and analytics,*

*Proficient in full-stack web development,*

*And crusading to make sustainability profitable.*

## EDUCATION

### Nanyang Technological University, Singapore

*Bachelor of Engineering / Major: Mechanical Engineering*

*Aug 2017 – Jun 2021*

- Select Courses: Management of Product Development, Design Thinking, **Deep Learning**, Computing, Manufacturing Processes, Sustainability, Engineering Mathematics, Control Theory, Product Presentation
- FYP | Reinforcement Learning and Dynamic Motion Primitives  
Researched ML, Deep Learning and Reinforcement Learning algorithm/ technologies. Evaluated MA-POCA algorithm by Unity to discover patterns in multi-agent simulation behavior. See paper [here](#).  
**Stack**: Python, **TensorFlow**, **PyTorch**, **TensorBoard**, NN optimization, C#, Unity3D

### Global Indian International School, Singapore

*International Baccalaureate Diploma/ Recipient of **Global Schools Award in Physics***

*July '15 – May '17*

Achievements: Founder of Tech Club, Sports Vice Captain, Merit List: International English Olympiad

## SKILLS

- **AI | Machine Learning | Data Science**: Python (NumPy, Pandas, Scikit-Learn, Matplotlib, Seaborn, Keras, PyTorch, TensorFlow, TensorBoard), MySQL, Big Data (Hadoop)
- **UI | UX | Design**: Figma, Photoshop, Unity3D, Unreal Engine
- **Full-stack Web Development**: HTML/ CSS, JavaScript (React, Vue.js, Next.js, Passport.js, Redux, Materials-UI), Python (Flask, Django), AWS, Web Scraping (Selenium, BeautifulSoup)
- **Software Development | GUI**: C, C++, JUCE framework, Kivy
- **Mechanical Engineering**: GD&T, P&I documents, Manufacturing Plant Ops, CNC Machining, Solidworks, Fusion360 (CAD/ CAM/ Demo), ANSYS (FEA & CFD Analysis), SimaPro (LCA)
- **Soft Skills**: Analytical Thinking, Project Leadership, Risk Management, Sustainable Design
- **Languages**: Fluent in English, Hindi, and French

## WORK EXPERIENCE

### Regional Head

*Jul 2020 – Sep 2020*

*BridgeLabz Solutions Pvt Ltd*

*Singapore*

*Ed-tech enterprise | Enriches tech employability through B2C tech training and B2B talent sourcing offerings*

- **Expanded business** for India-based corporation to Singapore and executed outreach efforts to local start-ups to **established business relations with over 20 c-level executives**.
- Managed local business and generated a customer portfolio of 200 over 4 marketing campaigns.
- Utilized **Business Intelligence tools** to rapidly optimize processes from real time sales data.

### Production Engineer (Intern)

*Jan 2020 – Jun 2020*

*Air Liquide Singapore Pte Ltd*

*Singapore*

*Packaged gas manufacturer | Quality assured production line. Optimized processes, SOPs through Six Sigma.*

- Ensured smooth operation of Production Plant and mitigated daily risks, in period of Covid-19.
- Developed Optical Character Recognition (OCR), using Python libraries, for identifying engraved product numbers and semi-automated tracking process and **reduced reporting time expended by 1/4<sup>th</sup>** and **accelerated stakeholder adoption by 40%.**
- **Revamped SOPs for new production-plant site** through analytical study of old documentations, HMIs, vendor specifications, CAD drafts, P&I docs, engineering objectives and automation requirements.

## PROJECTS

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### Taxi Trip Visualization and Optimization with Reinforcement Learning Jul 2021

- Built Vanilla-JS application for visualizing taxi trips in NYC Taxi Commission Trip database.
- Implemented 9 different algorithms (A\*, Dijkstra's) to visualize taxi trip in contrast to optimum path.
- Designed multi-agent pathfinding algorithm that sorted individual trips into ideal ride sharing routes that reduced annual travel time for the city by 12%. See project [here](#).

**Tech:** HTML/ CSS, JavaScript, Python, Keras, TensorFlow

### Sustainable Fashion Recommender Jun 2021

- Engineered a Res-Net based deep learning model for image classification and recommendation from "DeepFashion" database based on semantic similarity.
- Deployed model to advise sustainable fashion alternatives from "Goodbase.ai" database. See project [here](#).

**Tech:** Python, TensorFlow, Keras, Pandas, NumPy, Matplotlib, Scikit-Learn

### Singapore Housing Price Predictor Jun 2021

- Produced ML application to help buyer/ sellers of houses make an informed decision.
- Extracted data using "data.gov.sg" APIs. Created predictive model which analysed 50 years of historical data on land, transport, policies and forecasted future fluctuations by area. See project [here](#).

**Tech:** Python, NumPy, Pandas, Scikit-Learn, Matplotlib, Seaborn, Visuals

### 911 Calls Data Exploration May 2021

- Performed data wrangling, analysis, and trend visualization from 911 calls dataset on Kaggle.

**Tech:** Python, Pandas, Folium, Matplotlib, Seaborn || See project [here](#).

### "Deal Bazaar" e-commerce website May 2021

- Designed an e-commerce website with user authentication and "Stripe" payments integration.

**Tech:** HTML/ CSS, Python, Django, Stripe API || See project [here](#).

### Guitar Tab Tracker Web Application May 2021

- Developed a multi-feature full stack web-app for tracking guitar tabs using Vue.js and Express.js.

**Tech:** HTML/ CSS, JavaScript, Vue.js, Express.js, Node.js || See project [here](#).

### Social Media Website May 2021

- Built a database, web server and application for a social network using Python and Flask.

**Tech:** Python, Flask || See project [here](#).

### "Tropical Thunder" Music Production Application Mar 2021

- Programmed the windows GUI and backend for 3-band equalizer plugin (with spectrum analyser).

**Tech:** C++, JUCE framework || See project [here](#).

## LEADERSHIP

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**Leadership Development Club | Senior Leadership Mentor** Aug 2020 – Jun 2021

**180 Degree Consulting Club | Student Consultant** Aug 2020 – Jun 2021

**IEEE NTU | Vice President** Aug 2017 – Jun 2019

- Coached batch of **150 students** in technical workshops on Python programming.
- Organized Singapore's largest Hackathon "iNTUition", drawing in over 600 aspiring coders
- Supervised operations of 25-member committee and **grew event participations by 60%** during tenure

**Global Exchange & Mobility Club | Volunteer Coordinator, Team Leader** Aug 2018 – Jun 2019

**Sikh Cultural Society | Business Director** Aug 2017 – Jun 2018

## COMPETITIONS

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**SMU SPEX Case Competition | Team Lead | Analysed policy for nation Covid-19 resilience** Ongoing

**Engineering for Good | Innovated an Arduino IoT gadget as perception aid for blind patients** Ongoing

**Algo Trading Challenge | Implemented Quantitative & Sentiment Analysis for trading** Jul 2021

**SCDF x IBM Call for Code | Developer & Designer | Emergency Simulation for SCDF** Jun 2020

- Created 3D assets using Blender. Deployed simulation using Three.js. See project [here](#).

## HOBBIES & INTERESTS

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Track (State Level Gold) || Basketball (State Level Bronze) || Swimming (Inter-school Gold)

Music (Guitar) || Writing (Fiction, Technical) || Sculpturing (Wood)