

Subham Swastik Samal

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📍 Blacksburg, VA

Education

- 2022-2024 **M.S.**, Virginia Polytechnic Institute and State University (Virginia Tech), *GPA – 3.88/4*
Mechanical Engineering (*Research focus*: Robotics, Autonomous and Dynamical Systems)
- 2016-2020 **B. Tech.**, Indian Institute of Technology Madras, *GPA – 8.29/10*
Mechanical Engineering
- 2015 Awarded the KVPY Fellowship by the Department of Science and Technology among 100k applicants
- 2014 Selected for the NTSE Scholarship programme among 1 million applicants with an All-India Rank of 162

Professional Experience

- Sep'22 - **Graduate Research Assistant**, *Vibrations and Robotics Lab, Virginia Tech*
- Researching on data-driven modeling of pathological tremors to design improved rehabilitation devices
 - Developed a **real-time Model Predictive Controller** for a wearable exoskeleton for full-wrist pathological tremor alleviation
 - **Conference Proceeding**: Subham Samal, Oumar Barry. *Model Predictive Control for Tremor Suppressing Exoskeleton*. Modeling, Estimation and Control Conference, 2023 (**Accepted**)
- Oct'21 - Jul'22 **Assistant Manager**, *BGMH BU, Flipkart Internet Pvt Limited, India*
- Scaled up **Hyperlocal business by 5 times** for BGMH BU across 10 Metro/Tier-1 Cities in India
 - Devised a **logistic regression model** to determine the optimal product catalog for Hyperlocal, performed **demand forecasting** to assist inventory planning and budgeting
 - Collaborated with cross-functional stakeholders to ensure the **timely execution** of the action plans
 - **Mission Impossible Award (Jun 22)**: Recognized out of 240-person BGMH team for scaling up Hyperlocal
- Aug'20 - Sep'21 **Associate Business Analyst**, *BGMH BU, Flipkart Internet Pvt Limited, India*
- Built **20+ interactive dashboards** using SQL, Power BI, and Google Data Studio to track and provide insights on business metrics, saving the team **~15 hours** of weekly manual labour
 - Analysed product returns data in to identify common complaints, leading to changes that **reduced returns by 17%** from Dec'20 to Sep'21
- May'18 - Jul'18 **Summer Technical Trainee**, *CMS Engineering Unit, CERN, Geneva*
- Instrumented a thermal test setup aimed to **improve the cooling efficiency** in the CMS Outer Tracker
 - Programmed a DAQ system to **acquire, monitor and store** the sensor readings using LabVIEW
 - Performed detailed thermal analysis and achieved **90% experimental accuracy** with the simulations

Extra-Curricular Activities

- **Tutor, Dept of Mathematics, Virginia Tech**: Mentoring and doubt-clearing sessions for UG students on Maths UG courses
- **Coordinator, I-Bot Club, IIT Madras**: Organized hands-on sessions on elementary robotics and design topics for freshmen, organized inter-hostel manual robotics competitions, and managed club inventory
- **Deputy Manager, E-Cell, IITM**: Improved the social outreach of E-Cell, IIT Madras, and executed the 1st edition of the Start-up Intern Fair

Projects

AI Peg Solitaire

- Developed an **interactive environment** for the one-player Peg Solitaire game in Python for different board shapes and sizes
- Devised a **Reinforcement-learning** based AI to assist a human player reach highest scores

Movie Recommender Systems

- Developed a **content-based** movie recommender system by generating tags basis keywords, overview, genres, cast and crew, etc., and implementing **cosine similarity** to generate recommendations
- Built a server using **Streamlit** in Python and deployed the same using **Heroku** platform

Cyclic Knee Testing Mechanism

- Researched the mechanisms of **polycentric prosthetic knees** to devise a unique technique to test their lifespan
- Innovated a **crank rocker-based** mechanism to simulate the swing phase knee movement of a walking gait cycle
- Modelled the entire setup in **Creo**; performed kinematic and dynamic analyses using a Lagrangian approach, and chose all the components like the **motor, bearings, and sensors**
- **One of the 4 finalists** for the SRI award, awarded for the best **Inter-Disciplinary Bachelors Thesis Project**

Skills

Programming C, C++, Python, MATLAB, R, SQL

Frameworks Scikit-learn, TensorFlow, Keras, OpenCV, PyTorch, Streamlit

Tools/Softwares GIT, Arduino, Simulink, LabVIEW, LTSpice, Blender, MS Office, LATEX