Swapneel Mehta

Phone: +33766069819 • **E-mail:** swapneel.mehta@cern.ch • **Address:** 9 Rue des Chenes, 01630, France

EDUCATION

(Incoming) **Centre for Data Science, New York University,** USA **2019**

- Doctor of Philosophy in Data Science with Kyle Cranmer and Rajesh Ranganath

D. J. Sanghvi College of Engineering (DJSCE), University of Mumbai, India **2014 - 2018**

- Bachelor of Engineering, Computer Engineering; **GPA: 9.23**

PROFESSIONAL EXPERIENCE

Open-source contributions available at github.com/swapneelm

Technical Student, European Org. for Nuclear Research (CERN), Geneva **Mar '18 - Present**

- Investigating graph neural networks for efficient particle track reconstruction (similar to TrackML on Kaggle) using collision data extracted from Monte Carlo simulations.
- Optimizing and extending the 'DeepJet' deep learning framework for jet physics, built using Tensorflow, Python, and custom C++ extensions for multithreaded operations on systems using the CMS Software Environment.

Openlab Intern, European Org. for Nuclear Research (CERN), Geneva **June '17 - Aug '17**

- Developed an ensemble of unsupervised learning models for anomaly detection in database connections using an architecture for data streaming via Apache Hadoop (HDFS) and Spark; prototype available on Github.
- Published a first-author short paper, receiving a special mention in the machine learning track at 2nd Springer International Conference on Integrated Intelligent Computing, Communication, and Security, 2018.

***(Remote) Research Intern, Dr. S. Sahasrabudhe,** IIT-B, Mumbai **Aug '16 - May '17**

- Automating the evaluation for 3D Modeling assignments based on a proposed framework by researchers at the University of Torino (Italy) and learnings as a Course Instructor for the MOOC 'Skill Development in Animation' catering to over 5,000 participants on the IITBombayX platform.
- Published a first-author short paper at IEEE International Conference on Advanced Learning Technologies, 2018; releasing the code as a Python library including a wrapper for the Blender 2.79b Python API.

Engineering Intern, Smokescreen Technologies, Mumbai **Nov '16 - Mar '17**

- Combined low-latency network scans, hostname clustering, intelligent decoys, and automated deployment; trademark feature integrated into the NASSCOM-DSCI award-winning IllusionBlack software, 3rd Gen., 2017.
- Built a proof-of-concept honeypot with ICS/SCADA services responding on open ports in a FreeBSD 'jail' using open-source project 'Conpot'; mentored 2 interns from IIT-Bombay.

Engineering Intern, Falkonry Software Solutions, Mumbai **July '16 - Sept '16**

- Developed client API functions to enable real-time data streaming and subscription-based alerts in the three client connectors released as open-source codebases in Java, Python and Javascript.
- Implemented test-driven paradigms for agile development and integrated the modules within the primary product to support concurrency using multithreading and asynchronous calls.

Summer Intern, Microsoft Research, IIT Bombay, Mumbai **May '16 - July '16**

- Created a Google Analytics Dashboard to track and monitor user interactions on the "Lokacart" Android e-commerce application using the 'Enhanced E-commerce' SDK.
- Presented the project to Microsoft Research, as well as a reviewing committee comprising senior IIT faculty, and successfully defended its merits (video available: bit.ly/iitblokacart).

Co-founder, Cutting Chai Developers, Mumbai **Sept '15 - May '16**

- Founded a freelance web-development team working for 9 international clients including the Govt. of India, offering free workshops to schools and colleges eventually founding the student chapter DJ Unicode; currently 70 members (~30 women) focused on open-source development (ccdev.in).

Swapneel Mehta

PUBLICATIONS / TALKS

Slides and Publications available at swapneelm.github.io/presentations and Google Scholar

- **DeepJet: A Machine Learning Framework for High-energy Physics**
  Tutorial at the CMS Machine Learning Workshop, July 2018;
  Poster Presentation at the Machine Learning Summer School 2018, Spain;
  Google Cloud Poster Award at the Deep Learning Indaba 2018, South Africa;
  Poster Presentation at Nvidia GPU Tech Conference 2019, USA.

- **DeepJet: A Portable Machine Learning Framework for High-energy Physics**
  Oral Presentation at the 2nd CERN IML Machine Learning Workshop, 2018;
  Invited Talk, CVIT Lab, International Institute of Information Technology (IIIT), Hyderabad, India.

- **Autograding Pipeline for 3D Modeling Assignments in MOOCs**
  Short Paper at the 18th IEEE International Conference on Advanced Learning Technologies, 2018.

- **A Big Data Architecture for the Detection of Anomalies within Database Connection Logs**
  Short Paper, ***Special Mention*** at the 2nd Springer International Conference on Integrated Intelligent Computing, Communication & Security, 2018.

- **Reviewer**, Journal of Parallel and Distributed Computing (JPDC), October 2018.

COMMUNITY INVOLVEMENT

- **Mentor, The Grand Challenge, CERN/RCA:** Guiding 4-5 teams of students from the Royal College of Art in London on leveraging AI/ML for designing sustainable solutions in science for The Grand Challenge.

- **Contributing Author, Open Source For You Magazine:** Featured articles on Artificial Intelligence and Machine Learning Docker, Puppet, MS Windows, and tutorials on Jekyll, NodeJS, Git, among others reaching over 60,000 readers till date (goo.gl/57NN6Y)

- **Founding Member, DJ Unicode:** Launched a student chapter undertaking open-source web and app (Android) development projects jointly mentoring a team of ~70 sophomores and juniors with selections for Google Summer of Code, international internships, and hackathon winners across the country (github.com/djunicode).

- **Machine Learning Lead, Stanford Scholar Initiative:** Led an international collaboration of students and researchers in building scientific talks to make state-of-the-art research more accessible (scholar.stanford.edu).

- **Vice-Chairperson, Literary Society:** Organised debates, quizzes, Just-a-Minute; launched the College Newsletter, leading a team of 25 student-reporters to contribute dozens of articles (djvu.in).

- **Education Support Fellow, Make a Difference:** Taught English and Mathematics to 4 underprivileged students in the 6th and 7th grade for a year achieving ~20% average increase in their scores. Organised national social awareness events as part of a team supported by Ms. Michelle Obama.

AWARDS / FELLOWSHIPS

- **2nd Prize**, CodaLab Contest, Machine Learning in High-energy Physics Summer School, Oxford, 2018
- Economic Times Campus Stars Class of 2018 - Selected as one of **India's Top 33 Engineers**
- Stanford Graduate School of Business, Reliance Scholarship Finalist 2017 (**youngest finalist**; $150,000)
- Indian Academies of Science Fellowship, 2017
- Google and Tata Trusts Scholarship, 2016
- HackDAIICT, 2017 - 1st Runners-up; offer for incubation by Indian Space Research Organisation
- Barclays Rise Hackathon, Envestnet Yodlee Award, 2016
- CodeShastra Hackathon Winners, 2017
- Computer Society of India TechNext Hackathon, IIT Bombay, Winners, 2017
- Chief Minister's Scholarship, **Top 1% candidates** in Higher Secondary Certificate (12th Grade), 2014