

Dhruti Shah

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Female

DOB – 14/03/1996

Expected Graduation – Feb 2022

ACADEMIC BACKGROUND

- Master's in **Data Science**, École Polytechnique Fédérale de Lausanne (**EPFL**), Switzerland [19-'22]
- Bachelor's + Master's in **Electrical Engineering**, Indian Institute of Technology Bombay (**IITB**)
with specialization in *Communications and Signal Processing*, **CPI- 9.3/10** [14-'19]
Shankar Dayal Sharma **Gold medalist** – awarded for general proficiency, academic and extra-curricular

INTERNSHIPS

Masters thesis at IBM Research, Zurich [Aug '21 - Jan '22]

Ongoing work on developing "an interactive tool for semi-automated annotation, refinement of existing annotations for high-res image data for ML pipelines"

IBM Research, Zurich [July '20 - Jan '21]

Image stitching for defect and anomaly detection for civil engineering infrastructures

- Innovated a novel method for image stitching, in **Python** using **OpenCV**, for planar images captured by a drone
- Combined method with state-of-the-art defect detection methods, to localize defects on high-end civil engineering infrastructure, and used image registration techniques to study the evolution of defects over time
- Implemented the algorithm on **GPU** to get speed-up of 30x, and be able to stitch around 100 images in under 5 min
- **Patent pending** on the innovative image stitching algorithm for civil infrastructure, and publication in progress

Qualcomm, Hyderabad, India [May '17 - Jul '17]

Feature enhancement for flash memory communication between PC & target, now deployed on Qualcomm server

TechMahindra Innovation lab, Pune, India [May '16 - Jul '16]

Developed SCADA (Supervisory control & data acquisition) application in OpenDNP3 for energies & utilities domain in collaboration with Ontario Ministry of Energy

RESEARCH PROJECTS

Long-term motion prediction using keyposes, Computer Vision laboratory, EPFL [Feb '21 - Jun '21]

Using transformers for long-term human motion prediction using keyposes

- Human motion can be represented by few essential poses in the sequence – called **keyposes**, obtained using clustering techniques on the joint locations of observed poses in human motion
- Used keyposes for long-term human motion prediction, leading to diverse future motions, and realistic motions
- Implemented a transformer-based model in **PyTorch**, for keypose sequence prediction

Top m entity resolution, Guide: Prof Nikhil Karamchandani, IITB [Jan '18 - Jun '19]

Information theoretic bounds and algorithms to identify the top clusters for entity resolution in presence of an oracle
([Paper 1](#)) ([Paper 2](#))

Persistence of centrality, Guide: Prof Nikhil Karamchandani, IITB [July '17 – Apr '18]

Examined for persistence of different centrality measures in randomly growing graphs ([Paper](#))

OTHER PROJECTS

Reinforcement Learning [EPFL]	<i>Implementation of basic Reinforcement learning algorithms</i> [Feb '20-May '20] <ul style="list-style-type: none"> Studied theory and mathematics behind popular RL algorithms Implemented these in Python using OpenAI Gym and PyTorch to practical problems
Open Source Contribution - SCILAB	<i>Open source Image Processing library for SCILAB computational package</i> [Nov '15-Jan '16] <ul style="list-style-type: none"> Developed algorithms to implement MATLAB image processing functions in SCILAB Utilized OpenCV library in C++ to write function code and implement algorithms
Intelligent Video Analytics	<i>Video analysis- motion detection, object tracking, face detection, license plate recognition</i> [Dec '15] <ul style="list-style-type: none"> Optimized the currently used face detection and license plate recognition algorithm Programmed for motion detection, object tracking in OpenCV, for real time video analysis

TECHNICAL STRENGTHS

- Programming Languages Python, C, C++, Spark, SQL, HTML
- Working platforms iOS, Linux (Ubuntu), Microsoft Windows

VOLUNTEERING & LEADERSHIP

Volunteer, Abhiyasika [Jan '16 – July '19]

Abhiyasika – Student initiative of IIT Bombay to tutor underprivileged students in a slum

- Volunteering to teach English and Science to grade 11 and 12 students from underprivileged families twice a week
- Conducted career counselling sessions to inculcate the value of higher education among low-income families

Contingent Leader, Inter IIT sports meet 2017 [Oct '17 – Dec '17]

First ever female contingent leader to lead the IIT Bombay contingent at the annual Inter IIT sports meet

- Led 150-member strong IIT Bombay contingent to victory, winning the overall General Championship trophy
- Fostered team spirit by interacting with captains, coordinating practice sessions, team selections of all sports

Institute Student Mentor [Apr '17 – Jun '19]

Part of 80 member team of student mentors to help freshmen students; ensure their smooth transition to college life

- Selected from over 350 applicants based on peer review, academic, extra-curricular and mentoring skills
- Mentoring 12 freshmen students to guide them for overcoming academic & personal difficulties

EXTRA CURRICULAR ACTIVITIES

- Google Get Ahead Program:** Participated in 6-week virtual program for selected CS students across EMEA; involving technical challenges, YouTube live trainings and interview workshops [21]
- Student volunteer at Empowerment Lab, Geneva, taking Data Analytics class for 12-16 year olds [21]
- Recipient of “**Institute Sports Roll of Honor**”, the highest sporting honor at IIT Bombay [19]
- Awarded “**Person of the Year**” for contribution to sports in the Institute. [17-'18]
- Awarded “**Sports Freshman of the Year**” for outstanding performance, **2 of 880** freshmen [14]
- Successfully ran & completed IITB Run & Powai Hiranandani **Half Marathon – 21.097 km** [16]
- Completed the Runathon, endurance running - **4 hours, 32.8 km** at IIT Bombay [18]