Samriddhi Jain

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EDUCATION

ETH Zurich *September 2019 - present*
M.Sc. in Computer Science

Indian Institute of Technology Mandi *August 2013-2017*
B.Tech (Honours) in Computer Science and Engineering CGPA: 9.35/10
*(**Summa cum laude** and **President of India Gold Medal Awardee**)*

EXPERIENCE

ETH Zurich (Research Assistant) March 2020 - present

Working with Center of Law, Economics and Data Science group on language modelling.

Microsoft R&D Center, India (Software Developer Engineer) August 2017 - August 2019

Worked on Azure backup services, presently part of Mixed Reality engineering and experiences development team in India.

Udacity (Nanodegree Project Reviewer and Mentor) September 2017 - present

Reviewing projects and mentoring students in Deep Learning, Machine Learning, Flying Car Nanodegrees with projects covering concepts like CNNs, RNNs, GANs and Deep RL.

Outreachy-FOSS Round 14 (Internship) May - July 2017

Worked with **OpenStack** on their authentication and authorization module Keystone. One of the 39 participants selected all over the world.

PUBLICATIONS

1. Shikha Gupta, **Samriddhi Jain**, A D Dileep, Veena T; **Semantic Multinomial Representation for Scene Images Using Dynamic Kernel based SVMs**. *Accepted at SUNw at CVPR'16*
2. **Samriddhi Jain**, Renu M R, Aditya Nigam; **Object Triggered Egocentric Video Summarization**. *Accepted at CAIP'17*

RESEARCH WORK

Learning invariants for safe reinforcement learning
Guide: Prof. Martin Vechev (ETH Zurich) *March 2020 - present*
Ongoing semester research project focused on formal verification of security properties learnt by an RL agent.

Object triggered egocentric video summarization (Major Thesis Project)
Presented at WiCVw at CVPR'17

Guide: Dr. Renu M. Rameshan (IIT Mandi), Dr. Aditya Nigam (IIT Mandi) June 2016 - May 2017
Summarized all the instances of an object present in a given video, in near real time, supporting both semantic and exact object matching. Built a multi-stage pipeline to extract the frames in a computationally efficient way.

Anomalous Activity Localisation in prison videos (Major Thesis Project)

Guide: Dr. Renu M. Rameshan (IIT Mandi), Dr. Aditya Nigam (IIT Mandi) March - June 2017
Automatic detection and localisation of the fight instances occurring in prison videos. Used deep learning techniques like 3DConvNets and LSTMs to flag the instances as fight scenes.

PROJECTS

Scalable automated verifier for proving the robustness of neural networks against adversarial attacks November 2019

· Implemented automated verifier in Pytorch for certifying neural networks against adversarial attacks based on L_∞ norm image perturbations.

Collaborative Real-Time Text Editor October - November 2015

· Text editing tool collaborative over multiple systems built on server client model using techniques like Operational Transformation and libraries like diff-match-patch for data synchronisation.

Implementation of Resolution Refutation strategies in first order logic December 2016

· Involved extension of FOL to clause form and used the unification algorithm to implement and experiment various resolution refutation strategies in terms of their soundness and time complexity.

Implementation and visualisation of Generalised Lookahead search algorithms for solving constraint satisfaction problems May 2017

· Implemented and analysed Forward Checking, Partial Lookahead, Full Lookahead and Full AC algorithms over the basic backtracking algorithm. Added visualisation for highlighting pruning process.

Microsoft hackathon'18: Augmented reality grammar assist tool September 2018

· Designed and developed an AR spell check application which can scan any text, detect spelling mistakes and suggest corrections overlaid in real time.

Other projects like **AI bot for games "Battle of Kings", Othello**, case studies on multidimensional SciDB datastore and Apache Spark, **Mean-shift tracking in videos**, Implementation of standard pattern analysis and reinforcement learning algorithms

TECHNICAL STRENGTHS

Programming Languages: C, C++, Python, Java, C#, Swift, Scheme (Lisp)

OS: Linux environment, Windows, Mac OS

Others: OpenCV, TensorFlow, Keras, Pytorch, MATLAB, Data Parallelism using MPI, Latex

COURSE WORK (@ETH)

Advanced Machine Learning
Computer Vision
Probabilistic AI
Reliable and Interpretable AI
Advanced Systems Lab
Computational Intelligence Lab

AWARDS AND ACHIEVEMENTS

President of India Gold Medal for academic excellence in graduating batch of IIT Mandi 2017.
Institute Silver Medal for holding the first position in batch CSE 2017, IIT Mandi.
Selected with full travel grant for **Women in Computer Vision workshop at CVPR'17**.
Runner-Up at Inter IIT Tech Meet'16 in event Social Media Analysis
Academic Excellence Award for sessions 2013-14, 14-15, 15-16
Selected for **Outreachy** FOSS Internship
Student Scholarship'15 for Grace Hopper Conference for Women, India
Travel grant for OpenStack Sydney Summit, 2017

CONFERENCES ATTENDED

Computer Vision and Pattern Recognition (CVPR) 2017, Hawaii.
OpenStack Summit 2017, Sydney
Grace Hopper Conference for Women 2015, India