Gursimran Singh

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EDUCATION

UNI OF BRITISH COLUMBIA
MSc in Computer Science
Expected May 2019 | Vancouver, CA
Cum. 93.20% (till now)

THAPAR UNIVERSITY
BE in Computer Science
June 2013 | Patiala, India
Cum. GPA: 7.2 / 10

COURSEWORK

Machine Learning and Data Mining
Social and Information Networks
Information Visualization
Machine Learning
Multimodal Learning
Probablistic programming
Course Projects - [1, 2, 3, 4, 5, 6]

AWARDS

KVPY Fellowship (mentored)
Among 40 selected across India [1]
Accenture Innovation Jockey
Placed 1st/ 1000+ (cash award) [1,2]
Freescale Cup (aka NXP Cup)
Placed 5th/130 (cash award) [1, 2, 3]
Texas Analog Design Contest
Among top 25/180 (cash award) [1]
Freescale Smart Car Race
Among top 10/100 (cash award) [1]
IISER Summer Fellowship
Among 50 selected across India

HORIZONTAL

ML-India Links - [1, 2, 3, 4, 5,6]
CCS society Links - [1, 2, 3, 4]
Ubuntu community Links - [1, 2]

SKILLS

Frameworks:
Pandas • Sk-learn • PyTorch • D3
Programming:
Python • Matlab • Julia • C++
Tools:
Git • MySQL • LaTeX

RELEVANT PROJECTS

ENHANCED VISUAL DIALOG | Course Project

- Re-implemented the Visual Dialog (CVPR 2017; Das etal) paper, which proposes an image based conversation AI system.
- Proposed a Gumbel-softmax layer between the two bots, making the system **end-to-end differentiable** .
- Explored the use of a **Generative Adversatial Network** instead of a likelihood based training to make dialog more natural.
- Proposed a dynamic layer prediction mechanism that generates a **convolutional layer filter** to attend to a specific part of the image.

VIDEO QUESTION ANSWERING | Thesis Project (on going)

- Implemented a visual question answering system for videos which uses a variant of memory based spatial and temporal attention.
- Current implementation is able to beat the **state-of-the-art by 10%** on the TGIF QA dataset.

EXPERIENCE

UBC | Teaching and Research Assistant
September 2017 – Present | Vancouver, CA

- Courses TA'ed - Unsupervised Learning, Regression I, Feature and Model Selection, Advanced Machine Learning , Information Visualization, Data Science Workflows,

ASPIRING MINDS RESEARCH | Research Engineer
July 2013 – May 2017 | Gurgaon, India

- Devised and implemented a **scalable semi-supervised** framework to grade functional correctness, stylistic and runtime complexity of a programming code. The new approach expedited the question-development process by **5X** and led to a **KDD publication** . This is being used by **Amazon-US** to hire for SDE1 and SDE2 roles.

INTERNSHIPS | Research Intern
Feb 2012 – May 2012 and June 2011 – July 2011 | India

- **Indian Institute of Science** - Worked on **matrix completion** to investigate the incoherence property requirement to recover a sparse matrix.
- **Indian Institute of Technology** - Implemented **interactive simulations** of mathematical models in static, dynamic, stochastic and chaotic systems.

PUBLICATIONS AND PATENTS

1 **G.Singh** , S.Srikant, V.Aggarwal: Question Independent Grading using Machine Learning: The Case of Computer Program Grading, **ACM SIGKDD 2016** .

2 G.Singh, A.Ranjan, D.Singla, MD.Singh: Smart Library Management System (using RFID technology) Patent application No. 1695/DEL/2012 | Journal No. 40/ 2013.