Yash Mukund Kant

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EDUCATION

- **Indian Institute of Technology, Roorkee**   Uttrakhand, India
  B.Tech in Electrical Engineering; GPA: 8.405/10.000   *July 2015 – May 2019*

EXPERIENCE

- **Visiting Research Scholar**   Atlanta, GA
  Georgia Institute of Technology   *September 2019 - Present*
  - **TextVQA**:
    * Working on Visual Question Answering (VQA) models that read and reason over text in images.
  - **Visual Chatbot Demo** (http://demo.visualdialog.org/):
    * Ported Visual Chatbot Demo hosted on Cloud-CV from Lua-Torch backend to Pytorch.
    * Trained better Captioning and Visual Dialog models and implemented Beam-Search decoder.

- **Foreign Undergraduate Thesis**   Singapore
  National University of Singapore   *August 2018 - January 2019*
  - **Automated Machine Learning**:
    * Designed experiments to search for low memory consuming CNN architectures using Neural Architecture Search.
    * Implemented quantization and parameter sharing across the child models to optimize the search procedure.
  - **Resource Efficient Machine Learning**:
    * Explored ways to lower the compute of inference and training in ML models with quantization.

- **Software Development Intern**   Bengaluru, India
  Microsoft IDC, Bengaluru   *May 2018 - July 2018*
  - Developed a tool for to automate the creation of environments in Azure Data Lake Store.
  - Built a framework to extract configurations and detect malformed expressions in the Azure codebase.
  - Awarded with a **pre-placement offer(PPO)** for successful completion of the internship project.

- **Winter Research Intern**   Singapore
  National University of Singapore   *November 2017 - January 2018*
  - **Adversarial Machine Learning**:
    * Built experiments on adversarial machine learning methods like DeepFool and Fast Gradient Signed Method.
  - **Privacy in Machine Learning**:
    * Implemented Memebership Inference Attack on ML models under a white-box setting.

- **Software Development Intern**   Bengaluru, India
  Qureto Labs   *May 2017 - July 2017*
  - Developed an android app to handle end-to-end API calls and built UI layouts in XML.
  - Lauched the first version a week prior to the proposed deadline, and patched memory issues in the second version.

- **Android Development Intern**   Reliance Headquarters, Navi Mumbai
  Sizzle Labs   *November 2016 - February 2017*
  - Integrated Google Physical Web services in an android application to handle connections with nearby Bluetooth Low Energy beacons.

Projects

- **ICLR Reproducibility Challenge 2019**   December 2018 - January 2019
  https://github.com/yashkant/Padam-Tensorflow   *Arxiv: https://arxiv.org/abs/1901.09517*
  - ○ Reproduced the experiments in the ICLR 2019 submission PADAM in Tensorflow.
  - ○ Exposed shortcomings of the work and proposed future directions of study.

- **Complement Objective Training for Multi-label Settings**   February 2019 - April 2019
  https://github.com/facebookresearch/pythia/pull/32   *Report: https://bit.ly/2XnOzZI*
  - ○ Added a new training scheme Complement Objective Training to Pythia (Facebook's open-source framework for vision and language).
  - ○ Analyzed non-convergence issues of Complement Objective Training with Pythia.

- **Quantized Neural Networks**   August 2018 – September 2018
  https://github.com/yashkant/Quantized-Nets
  - ○ Designed and conducted experiments on Binarized, Ternarized and N-bit Quantized Neural Networks in Tensorflow.
  - ○ Performed a comparative study of quantization schemes and activation functions vs. compute needed for inference.

- **Progressive Neural Architecture Search for Secure Machine Learning**   July 2018 – August 2018
  National University of Singapore
  - ○ Designed and added a new penalty function proportional to latency of communication of the MLaaS protocol.
  - ○ Quantized the search space of PNAS with binary networks.

- **Decision Flip Experiments**   November 2017 - January 2018
  https://github.com/yashkant/Decision-Flip-Experiments
  - ○ Studied and implemented adversarial machine learning methods (FGSM, DeepFool) and their explainability with LIME .
  - ○ Conducted experiments studying the effect of overfitting on the classification boundaries of an ML model.

- **Skip The Queue (Microsoft Code Fun Do 2017 National Finalist)**   January 2017 - March 2017
  https://github.com/yashkant/Skip-The-Queue
  - ○ Developed a productivity app on Android using Physical Web and Location Services.

- **Modeling Anomalies in Temporal Data using LSTM Networks**   January 2018- February 2018
  Industry Oriented Course Project   *Supervisor: Dr. Felix Orlando*
  - ○ Performed a comparative study of LSTM networks against simple feed-forward networks for modeling temporal data and anomalies in it.
  - ○ Studied different types of anomalies which occur in practice in temporal data using real-world datasets.

- **Students Affairs Council Official Website**   January 2017 - May 2017
  Institute Technical Council
  - ○ Developed the backend of Institute's official SAC website on Python Django framework.

- **Driverless Car**   April 2016 - June 2016
  Artificial Intelligence and Electronics Society, IIT Roorkee
  - ○ Worked in lane detection, responsible for navigation and environment mapping.

Achievements

- ○ The only student of 2019 Batch at Indian Institute of Technology Roorkee to work on undergraduate thesis abroad without extending the duration of B.Tech program.
- ○ 99.89 percentile in Joint Entrance Examination 2015 among 1.3 million students.

Relevant Courses (Online) and Books

CS231N: CNNs for Visual Recognition (Stanford)	Deep Learning Book (by I. Goodfellow et al.)
Linear Algebra	Machine Learning
MIT OCW 6.006 (Introduction to Algorithms)	Reinforcement Learning (UCL, David Silver)

Position of Responsibilities

- **Joint Secretary**
  Artificial Intelligence and Electronics Society, IIT Roorkee   *May 2017 - May 2018*
    - Mentored three teams of four members each working on AI and IOT based projects.

- **Core Team Member**
  Institute Technical Council, IIT Roorkee   *January 2017 - May 2017*
    - The group oversees technical reforms in the Institute, proposed circulation of RFID based ID cards.

- **Executive Member**
  Counselling Cell, IIT Roorkee   *September 2015 - May 2017*
    - Served as an executive member of an active student welfare group, managed and anchored events conducted by the cell.

References

Prof. G.N. Pillai	**Prof. Devi Parikh**	**Prof. Dhruv Batra**
Dept. of Electrical Engineering	College of Computing	College of Computing
IIT Roorkee	Georgia Tech	Georgia Tech
gnathfee@iitr.ac.in	parikh@gatech.edu	dbatra@gatech.edu