Ayush Shrivastava

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Education

Georgia Institute of Technology — Atlanta, USA
- *Master of Science in Computer Science (Specialization: Machine Learning)* — *Aug 2019 – Present*
  Expected Graduation: May 2021; Expected GPA: 4.0/4.0

Indian Institute of Technology (BHU) Varanasi — Varanasi, India
- *Bachelor of Technology in Computer Science and Engineering* — *Jul 2014 – May 2018*
  GPA: 9.20/10.0

Research Interests

Computer Vision, Deep Learning, Natural Language Processing

Awards and Achievements

- Travel Scholarship for **Google Summer of Code Mentor Summit 2018**, Google Sunnyvale
- Presented our project, Memento at **Microsoft's code.fun.do SHOWCASE** 2017; received Travel Scholarship
- Winner, **code.fun.do 2017**; hackathon conducted by **Microsoft**
- Runner up, **code.fun.do 2016**; hackathon conducted by **Microsoft**
- Winner, Enigma; ML hackathon conducted by CodeFest 2016 (Computer Science Fest, IIT BHU)
- Secured **All India Rank 859** in IIT JEE (Advanced) 2014 among 1.5 Lakh students (among top 0.5%)
- **Vibrant Academy Scholarship recipient** (2012 - 2014)

Publications (* denotes equal contribution)

- **Chasing Ghosts: Instruction Following as Bayesian State Tracking**
  Peter Anderson*, **Ayush Shrivastava***, Devi Parikh, Dhruv Batra, Stefan Lee
  Neural Information Processing Systems (NeurIPS) 2019

Work Experience

- **Georgia Institute of Technology** — Atlanta, GA
  Graduate Research Assistant | *Superviser: Prof. Devi Parikh* — *Aug 2019 - Current*
  - Working on using BERT-style models to better ground navigation instruction in 3D environments.

- **Georgia Institute of Technology** — Atlanta, GA
  Visiting Research Scholar | *Superviser: Prof. Devi Parikh, Prof. Dhruv Batra* — *Aug 2018 - May 2019*
  - Worked on solving navigation instruction following in 3D environments by following an ideal agent trajectory. Presented at *NeurIPS 2019*

- **Google Summer of Code 2018** — Atlanta, GA
  Mentor | *CloudCV organisation* — *Apr 2018 - Aug 2018*
  - Mentored a student for Fabrik project. Added support for importing/exporting models from TensorFlow. Built real time collaboration feature where multiple users can edit or review the model at the same time.

- **Nanyang Technological University [code]** — Singapore
  Research Intern | *Superviser: Prof. Lam Siew Kei, Prof. Thambipillai Srikanthan* — *May 2017 - Jul 2017, Dec 2017*
  - Built fast semantic segmentation models for autonomous driving by reducing complexities in model architecture. Explored and combined different deep learning models like PSPNet and MobileNets.

- **Defence Research and Development Organization** — New Delhi, India
  Research Intern | *Supervisor: Dr. Saibal K. Pal* — *May 2016 - Jul 2016*
  - Implementation and performance analysis of Extreme Learning Machines and its variants on object detection and blind blur detection.

Selected Projects

- **Fabrik: Build, visualize, and design neural nets in browser** [**http://fabrik.cloudcv.org**]
  - Online collaborative platform to build, visualize and train deep learning models via a simple drag-and-drop interface; **40+ open source contributors; 900+ stars; 230+ forks**
- **Real-time Uniform Passenger Distribution for Metro Transport Systems using Machine Learning and Fog Computing**
  B.Tech Thesis Project | Supervisor: Prof. Hari Prabhat Gupta
  - Developed a dynamic programming solution for optimal crowd distribution of onboard passengers in metro, assuming inter-carriage travel is allowed and integrated it with fog architecture in distributed setting.
  - Developed a solution to alert passengers about crowded carriages using history of crowd distribution.
- **Memento: Never forget a thing!** [poster] [demo]
  - Built an Android app which acts as an *assistive memory*. It captures images, records audio and save them in the processed form of events of a day which can be later searched and retrieved.
- **Identification of User Transport using Smartphone Sensors** [poster]
  - Built an app for collection of a new dataset of smartphone sensor values for transport mode detection.
  - Hierarchical classification of transport modes (stationary, walking, bicycle, motorbike, car, bus, train, airplane) using GPS, accelerometer, gyroscope sensors.
- **Automated Retrieval Of Similar Mammograms Using Segmentation** [poster]
  - Developed an approach for segmentation of mammograms by automating the preprocessing step (selection of Region of Interest, removal of pectoral muscles) previously done manually; followed by their clustering based on their texture features
- **Feature Extraction And Classification For Mammograms**
  - Image enhancement and extraction of texture features using Gray-level Co-occurrence Matrix.
  - Feature selection by Adaboost, classification by Random Forest into normal and abnormal mammograms.

Service Roles and Academic Activities

Challenge Organization

- VQA Challenge — 2019
- Visual Dialog Challenge — 2018, 2019

Workshop Organization

- Visual Question Answering and Dialog Workshop — CVPR 2019

Teaching Assistant

- ITW1: Python and Shell Programming — Spring 2017
- CS 101: Computer Programming and Linux — Fall 2016

Programming Skills

- **Languages**: Python, C, C++, C#, Java, Javascript, Lua, MATLAB
- **Frameworks**: PyTorch, TensorFlow, Torch, Django
- **DevOps**: Docker, Amazon Web Services, Google Cloud
- **Version Control**: Git
- **Mobile Applications**: Android, Windows Phone App Development