Vishvak Murahari

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Education

Princeton University — Princeton, NJ
PhD in Computer Science — *Sep 2020 – Present*
GPA: 4.0

Georgia Institute of Technology — Atlanta, USA
Masters of Science in Computer Science (Specialization: Machine Learning) — *Aug 2018 – May 2020*
GPA: 4.0/4.0

Georgia Institute of Technology — Atlanta, USA
Bachelors of Science in Computer Science (Specialization: Artificial Intelligence and Devices) — *Aug 2015 – May 2018*
GPA: 3.96/4.0 (Highest Honors)

Research Interests

Natural Language Processing, Deep Learning, Reinforcement Learning, Computer Vision

Publications

DataMUX: Data Multiplexing for Neural Networks [Paper] [Code] [Website]
Vishvak Murahari, Carlos E. Jimenez, Runzhe Yang, Karthik Narasimhan
arxiv preprint

Large-scale Pretraining for Visual Dialog: A Simple State-of-the-Art Baseline [Paper] [Code] [Talk]
Vishvak Murahari, Dhruv Batra, Devi Parikh, Abhishek Das
European Conference on Computer Vision (ECCV) 2020

Improving Generative Visual Dialog by Answering Diverse Questions [Paper] [Code] [Poster]
Vishvak Murahari, Prithivijit Chattopadhyay, Dhruv Batra, Devi Parikh, Abhishek Das
Empirical Methods in Natural Language Processing (EMNLP) 2019

On attention models for human activity recognition [Paper]
Vishvak Murahari, Thomas Ploetz
International Symposium on Wearable Computers (ISWC) 2018

Awards and Achievements

- Awarded the MS Research Award by the College of Computing, Georgia Tech
- Awarded Faculty Honors by Georgia Tech for 5 out of 6 semesters in my undergraduate degree.
- Represented India at the World Robotics Olympiad in 2013 and 2014.
- Selected for the prestigious NTSE scholarship offered by the Govt. of India

Work Experience

Allen Institute for Artificial Intelligence (AI2) — Seattle, WA
Research Intern — *May 2020 - Aug 2020*

- Developed weakly-supervised approaches for learning language grounding in embodied agents.
- Developed instruction-following polices in the THOR simulator.

MICROSOFT — Redmond, WA
Engineering Intern — *May 2019 - July 2019*

- Built data-driven models to do query re-formulation and improve email search relevance in Outlook 365.
- Built ML models to detect and update irrelevant user search queries.

MICROSOFT — Redmond, WA
Engineering Intern — *May 2018 - July 2018*

- Built a real-time ML architecture to recommend game suggestions to Xbox users.

- Developed Gradient Boosted Tree Models to learn user engagement behavior on the Xbox Console.
- Designed objective evaluation metrics to gauge user engagement.

MICROSOFT Redmond, WA
Engineering Intern *May 2017 - July 2017*
- Designed a low-latency system to process privacy requests from Windows users to delete sensitive data.
- Designed a delete processor to back a highly scalable privacy dashboard for all Windows 10 users.
- Developed an algorithm to predict server running costs for teams at Microsoft.

PEGA Atlanta, GA
Engineering Intern *May 2016 - July 2016*
- Automated daily business processes by creating bot agents to automatically navigate business applications.
- Developed a bot creation framework in C# for PEGA clients to accelerate creation of task-specific bots.
- Designed an intuitive user interface for analysts to interact with and deploy bots with ease.

Teaching

Introduction to Robotics and Perception Atlanta, GA
Teaching Assistant *Fall 2018,2019 ; Spring 2018,2019*
- Advised more than 300 students on robotic planning, control and localization.
- Collaborated with co-TAs to create projects on robot localization.

Introduction to Artificial Intelligence (AI) Atlanta, GA
Teaching Assistant *Fall 2017, Spring 2017*
- Guided more than 300 students on AI projects ranging from probabilistic inference to Neural Networks, Optimization and Reinforcement Leaning.

Computing for Engineers Atlanta, GA
Teaching Assistant *Fall 2016, Spring 2016*
- Advised more than 1000 students on MATLAB projects introducing the fundamentals of computing.
- Taught a 90 minute weekly recitation and collaborated with co-TAs to create weekly assignments.

Selected Projects

Real-time Gesture Recognition on Wearables
- Designed a novel machine learning pipeline for real time gesture recognition on off-the-shelf devices.
- Deployed the system on Google Glass and optimized performance in everyday settings.

How much should you rent your home for? A recommendation tool for renting Airbnbs
- Devised Machine Learning approaches to model Airbnb prices by leveraging both Airbnb and Zillow listings and created interactive map-based visualizations of average prices across the United States.

Everybody Dance Now
- Implementation of Chan et. al (ICCV 19)

Service Roles and Academic Activities

Challenge Organization
Visual Dialog Challenge CVPR 2020
Workshop Organization
Visual Question Answering and Dialog Workshop CVPR 2020

Skills

- **Languages**: Python, C, C++, C#, Java , MATLAB
- **Frameworks**: PyTorch, NumPy, Pandas, Scikit-Learn, Open CV
- **DevOps**: Amazon Web Services, Google Cloud
- **Version Control**: Git
- **Mobile Applications**: Android

Selected Coursework

• Mathematical Foundations of ML • Deep Learning • NLP • Machine Learning • Adaptive Control and RL
• ML Theory • Computer Vision • Algorithms • Data and Visual Analytics • Systems and Networks