Viraj Uday Prabhu

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EDUCATION

Georgia Institute of Technology, Atlanta *2017 - 2019*

M.S. in Computer Science, advised by Prof. Devi Parikh. GPA: 4.00

Birla Institute of Technology and Science, Pilani *2011 - 2015*

B.E. in Computer Science

RESEARCH EXPERIENCE

Visual Intelligence Lab, Georgia Tech Fall 2017 - Present

Graduate Research Assistant, advised by Prof. Devi Parikh *Atlanta, GA*

Working on cooperative visual conversational agents, and on evaluating the utility of interpretability modalities proposed for such agents in the context of human-AI teams.

Curai Summer 2018

Research Intern, mentored by Dr. Anitha Kannan *Palo Alto, CA*

Worked on few-shot learning for automated dermatological diagnosis, proposing approaches to model long-tailed dermatological data with high intra-class diversity, and showed generalization to standard low-shot benchmarks.

Machine Learning and Perception Lab, Virginia Tech Fall 2016 - Spring 2017

Research Assistant, advised by Prof. Dhruv Batra *Blacksburg, VA*

Worked on augmenting visual conversational agents with mechanisms for question relevance detection, and explored human-in-the-loop evaluations of such agents. Also served as teaching assistant for *Intro to Machine Learning*, Fall 2016, taught by Dr. Stefan Lee.

Adobe Systems Summer 2014

Research Intern, Adobe Presenter Video Express (PVX) *Bangalore, KA*

Designed and implemented fast graphcut-based segmentation algorithm for real-time background substitution in video. Transferred into *Magic Green Screen*, the marquee feature of PVX 11.

ACHIEVEMENTS & SERVICES

Reviewer, NeurIPS (**adjudged top-30%**), CVPR, ICLR, ECCV 2018.

Winner, VTHacks 2017, Virginia Tech's annual hackathon, for FilterAI, a smarter image search engine.

Winner, Google Hackathon, APOGEE 2014, (BITS Pilani's technical symposium), from over 25 teams.

Second Place, Project Presentation (Adaptive Technology and Design Appliances Tracks), APOGEE 2013.

Presenter, Visual Chatbots demo, CVPR 2017, Honolulu, Hawaii.

Travel Scholarship, to represent CloudCV at Google Summer of Code Mentor summit 2016, 2017.

Top-200 rank, BITSAT 2011, among 120k applicants.

Top-100 rank, ICSE 2009 among over 150k applicants (awarded Amul Vidya Shree).

PUBLICATIONS & PREPRINTS

V. Prabhu, A. Kannan, M. Ravuri, M. Chablani, D. Sontag, X. Amatriain. Prototypical Clustering Networks for Dermatological Disease Diagnosis. *Under review. Preliminary version accepted at ML4H Workshop, NeurIPS 2018.* [arXiv][Poster]

U. Garg, **V. Prabhu**, D. Yadav, R. Ramrakhya, H. Agarwal, D. Batra. Fabrik: An Online Collaborative Neural Network Editor. *Under review* [arXiv]

A. Chandrasekaran*, **V. Prabhu***, D. Yadav*, P. Chattopadhyay*, D. Parikh. Do Explanations make VQA Models more Predictable to a Human? In *Conference on Empirical Methods in Natural Language Processing (EMNLP) 2018.* (* equal contribution) [Proceedings]

A. Mahendru*, **V. Prabhu***, A. Mohapatra*, D. Batra, S. Lee. The Promise of Premise: Harnessing Question Premises in Visual Question Answering. In *Conference on Empirical Methods in Natural Language Processing (EMNLP) 2017.* [Proceedings]

P. Chattopadhyay*, D. Yadav*, **V. Prabhu**, A. Chandrasekaran, A. Das, S. Lee, D. Batra, D. Parikh. Evaluating Visual Conversational Agents via Cooperative Human-AI Games. In *AAAI Conference on Human Computation and Crowdsourcing (HCOMP) 2017.* [arXiv]

A. Chandrasekaran*, D. Yadav*, P. Chattopadhyay*, **V. Prabhu***, D. Parikh. It Takes Two to Tango: Towards Theory of AI's Mind. In *Chalearn Looking at People Workshop, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2017.* [arXiv]

PROGRAMMING EXPERIENCE

CloudCV Summer 2016, 2017
Mentor, Google Summer of Code, Google Code-In *Blacksburg, VA*

Lead mentor for Fabrik (`github.com/Cloud-CV/Fabrik`), an open-source web platform to collaboratively build, visualize, and design neural networks in the browser. (**945+ stars, 230+ forks** on GitHub)

Adobe Systems 2015 - 2016
Member of Technical Staff, Adobe Captivate Prime *Bangalore, KA*

Individually responsible for the Captivate Prime Android app through two release cycles, contributing with features and bugfixes for offline content play-back, syncing and UI.
Implemented a scalable framework for internationalization of the front-end codebase across 6 spoken languages.

Tonbo Imaging Fall 2016 - Spring 2017
R&D Intern *Bangalore, KA*

Automated Calibration: Developed algorithm for automated calibration of company cameras using a collimator and AprilTag target setup, reducing calibration error by 6%.
Boresighting: Developed a boresighting algorithm to precisely align a weapon's muzzle and sighting system with a target at 10m to 100m for TDS-BRS, Tonbo's video precision boresight tool.

CEERI Pilani Spring 2014
Project Assistant, advised by Prof. Jagdish Raheja *Pilani, RA*

Prototyped a modern teleconferencing application that captured a 360° FOV by interfacting multiple Kinect sensors, and identified and displayed the current speaker.

SELECTED PROJECTS

Implementation of *Learning Cooperative Visual Dialog Agents via Deep Reinforcement Learning*

PyTorch implementation **(100+ stars on GitHub)** of Das & Kottur et al, ICCV '17. Used as starting point for the PyTorch starter code for the Visual Dialog challenge, 2018. (`github.com/batra-mlp-lab/visdial-rl`)

Inner Dialog: Visual Dialog Models that Rollout a Mental Model of their Interlocutors [Poster]
Course Project, CS 7641 (Deep Learning) *Fall 2017*

Explored pragmatic inference techniques based on dialog rollouts for cooperative, goal-driven visual dialog agents.

Exploring Weak-Supervision and Generative Models for Semantic Segmentation [Report]
Course Project, CS 8803 (Probabilistic Graphical Models) *Spring 2018*

Explored weakly supervised semantic segmentation using localization cues obtained from visual explanation modalities, refined using dense Conditional Random Fields. Further studied semantic segmentation via deep probabilistic generative models (cVAE and jVAE).

PROGRAMMING SKILLS

Languages: Python, Lua, C/C++, Java, JavaScript, MATLAB, Shell
Technologies: PyTorch/Torch, Keras, TensorFlow, LaTeX, ReactJS, Android