Purva Tendulkar

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RESEARCH INTERESTS

Deep Learning, Vision and Language, Reinforcement Learning
Creative AI, Music Information Retrieval

EDUCATION

School of Interactive Computing, Georgia Tech 2018-Present
M.S. in Computer Science
Advised by Prof. Devi Parikh
CGPA : 4.0/4.0

College of Engineering Pune (COEP) 2014-2018
B.Tech. in Computer Science
CGPA : 9.14/10.0

PUBLICATIONS

Feel The Music: Automatically Generating A Dance For An Input Song
Pre-print **(under review)**
P. Tendulkar, A. Das, A, Kembhavi, D. Parikh

SQuINTing at VQA Models: Interrogating VQA Models with Sub-Questions
IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020 **(Oral)**
R. Selvaraju, **P. Tendulkar**, D. Parikh, E. Horvitz, M. Ribeiro, B. Nushi, E. Kamar

Trick or TReAT: Thematic Reinforcement for Artistic Typography
International Conference on Computational Creativity (ICCC) 2019 **(Oral)**
P. Tendulkar, K. Krishna, R. Selvaraju, D. Parikh

AWARDS & RECOGNITION

Winner: Best Presentation Award at ICCC'19
Recipient: Pratibha Eaton Excellence Award for women engineering students (2017)
Finalist: Computer and Science Quiz organized by Computer Society of India (2011)
Recipient: Maharashtra Talent Search Award (2009)

TECHNICAL SKILLS

Programming languages: Python (with PyTorch), C/C++
Web development: Django, HTML, JavaScript, MQSQL

RELEVANT COURSES

Graduate Coursework
• Deep Learning • Machine Learning • Natural Language Processing
• Computer Vision • Introduction to Graduate Algorithms
Selected Undergraduate Coursework
• Natural Language Processing • Linear Algebra
• Experimental Design and Data Analysis • Data Structures
• Design and Analysis of Algorithms • Discrete Structures and Graph Theory
• Computer Algorithms in Signal Processing • Advanced Unix Programming

EXPERIENCE

AiBee Corp, Palo Alto May 2019-Aug 2019
Research Intern, mentored by Chunhui Gu and Juan Carlos Niebles
Worked on using recurrent neural networks to analyse trajectories of people in a shopping mall in order to detect events and perform intentions classification.

Visual Intelligence Lab, Georgia Tech Aug 2018-ongoing
Research Assistant, mentored by Prof. Devi Parikh

Currently working on developing personable AI that humans can like, trust, teach and learn from – including creative AI, vision & language and reinforcement learning.

CPS Research Group, NTU May 2017-Aug 2017
Research Assistant, mentored by Prof. Arvind Easwaran
Worked on analysing notorious security attacks on Cyber Physical Systems (CPSs) and performed extensive vulnerability analysis in order to improve system design.

IIT, Bombay May 2016-Aug 2016
Software Developer, mentored by Prof. Varsha Apte
Worked on EvalPro, a Django webapp being used in the CSE Department of IIT Bombay for handling computer related tests, assignments and automated evaluation.

SELECTED PROJECTS

Language-based explanations for VQA
With Sameer Dharur and Ramprasaath Selvaraju
We make use of the VQA Introspect dataset to analyse existing VQA models and understand which questions they *use* or deem important while answering a main question. For example, for an image with yellow bananas and a question "What color are the bananas?", we expect that models should place more importance on a question like "What color is the banana?" than "How many bananas are in the image?". We study ways to quantify this intuition and evaluate state-of-the-art VQA models. We also find that forcing the right ordering makes these models more consistent and reason better.

Blind Image Dehazing
Mentored by Yuval Bahat and Kalpesh Krishna
Implemented the ICCP 2016 paper Blind Image Dehazing Using Internal Patch Recurrence. Improved the method for selecting pairs of image patches for blind dehazing as compared to the original brute force method. Achieved approximately 20x better speed for optimization in PyTorch as compared to the original MATLAB implementation.

Punny Captions
Implemented the NAACL 2018 paper Punny Captions : Witty Wordplay in Image Descriptions which generates punny captions for a boring image.

REFERENCES

- Prof. Devi Parikh, Georgia Tech (email: parikh@gatech.edu)
- Dr. Aniruddha Kembhavi, AI2 (email: anik@allenai.org)
- Dr. Chunhui Gu, AiBee Corp. (email: chgu@aibee.com)
- Dr. Juan Carlos Niebles, Stanford University (email: jniebles@cs.stanford.edu)
- Prof. Arvind Easwaran, NTU (email: arvinde@ntu.edu.sg)