SHAUNAK HALBE

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EDUCATION

Georgia Institute of Technology *August 2022 - 2027*
PhD in Machine Learning **GPA: –/4.0**
School of Interactive Computing
Advisor : Prof. Zsolt Kira

College of Engineering Pune (COEP) *July 2018 - June 2022*
Bachelor of Technology (Hons.) **GPA: 9.72/10**
Department of Computer Science & Engineering **Institute Rank: 1/738**
Advisor : Prof. Vahida Attar Link to Transcripts

RESEARCH INTERESTS

Robustness and Generalization, Continual Learning, Multimodal AI, Explainable AI

PUBLICATIONS

1. DAIR: Data Augmented Invariant Regularization [arxiv]
Tianjian Huang, ***Shaunak Halbe****, Chinnadhurai Sankar, Pooyan Amini, Satwik Kottur, Alborz Geramifard, Meisam Razaviyayn, Ahmad Beirami*

· Transactions on Machine Learning Research (TMLR), 2022

2. Localizing Moments in Surveillance Videos using Natural Language Queries [TBA]
Shaunak Halbe*, Viren Patil, Vasvi Gupta, Karishma Pawar, Vahida Attar*

· Under Review at an A* Computer Vision Conference

3. Reason & Act : A Modular Approach to Explanation Driven Agents for Vision and Language Navigation [pdf] [video]
Shaunak Halbe*, Ingrid Navarro, and Jean Oh*

· Carnegie Mellon University RISS Working Papers Journal Vol. 9, pp. 102-107

4. Exploring Weaknesses of VQA Models through Attribution Driven Insights [pdf] [talk]
Shaunak Halbe

· Second Grand-Challenge and Workshop on Multimodal Language, **ACL 2020**, pp. 64-68
· Visual Question Answering & Dialog Workshop, **CVPR 2020**

RESEARCH EXPERIENCE

Carnegie Mellon University Pittsburgh, PA
Robotics Institute Summer Scholar (RISS) *June 2021 - Feb 2022*

· Worked under the guidance of Prof. Jean Oh on developing a modular agent for the task of Vision and Language Navigation in Continuous Environments (VLN-CE). Integrated a multimodal transformer into this agent for improved cross-modal grounding. Additionally, a novel reasoning component was introduced to provide supplementary signals during navigation.
· Developed a style of automated template-based instructions to be injected into the agent at each step, as a form of data augmentation.

University of Southern California Los Angeles, CA
Research Intern *May 2021 - May 2022*

· Worked under the guidance of Dr. Ahmad Beirami (Meta AI Research) & Prof. Meisam Razaviyayn on developing a novel regularization technique to promote robust domain invariant feature learning through data augmentation. Proposed the application of this regularizer to several tasks involving Multimodality, Adversarial Robustness, Domain Shift, Task-Oriented Dialog etc.
· Demonstrated state-of-the-art results against problem specific approaches across a variety of tasks.

Meta (Facebook) AI Research Menlo Park, CA
External Research Collaborator *Jan 2021 - Mar 2022*

· Remotely collaborated with Dr. Satwik Kottur to perform robustness studies on state-of-the-art Visual Dialog models. To emulate a real-world setting, we accumulated paraphrased dialogs by backtranslating the original ones through off-the-shelf Machine Translation models.
· Integrated a contrastive learning approach to improve robustness towards these paraphrased dialogs.

SILP Lab, IIIT Allahabad Allahabad, India
Winter Research Intern *Dec 2019 - Jan 2020*

· Conducted Research under the supervision of Prof. Uma Shanker Tiwary in the domain of Image Captioning. Looked into extending the DenseCap model to locally curated datasets.

ACADEMIC ACHIEVEMENTS

- Received COEP's Best Outgoing Student Award for excellence in academic and extra-curricular activities (2022)
- Awarded the Gold Medal for maintaining the Highest GPA in the graduating batch and in Computer Science at COEP (2022)
- Received COEP's Alumni Association Award for three consecutive years for being **1st** (among 738 students) across all departments, according to the GPA-based ranking scheme (2020, 2021, 2022)
- One of the 15 Viterbi-India Scholars selected by Viterbi School of Engineering (USC) and the Indo-US Science and Technology Forum for a fully funded research internship in Summer 2021
- Selected for the prestigious Robotics Institute of Summer Scholars (RISS) 2021 program at CMU to pursue research supported by a generous scholarship (only 50 scholars were selected out of 700+ applicants worldwide)
- Offered the Mitacs Globalink Award to conduct funded research in Canada during Summer 2021
- Shortlisted for the highly-selective EPFL Summer Fellowship from 4500+ applicants worldwide

SERVICE

- Served as a reviewer for the CMU Robotics Institute Working Papers Journal, 2021
- Volunteered at ACL 2020, EMNLP 2020, NeurIPS 2020 and NAACL 2021

REFERENCES

- Dr. Ahmad Beirami — Research Scientist, Google Research, NY, USA
- Prof. Jean Oh — Associate Professor, Carnegie Mellon University, PA, USA
- Prof. Meisam Razaviyayn — Assistant Professor, University of Southern California, CA, USA
- Dr. Satwik Kottur — Research Scientist, Meta (Facebook) AI, CA, USA