

# SHAUNAK HALBE

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Homepage : <https://shaunak27.github.io>

## EDUCATION

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### Georgia Institute of Technology

PhD in Machine Learning

School of Interactive Computing

Advisor : [Prof. Zsolt Kira](#)

August 2022 - 2027

GPA:  $\geq$ 4.0

### College of Engineering Pune (COEP)

Bachelor of Technology (Hons.)

Department of Computer Science & Engineering

Advisor : [Prof. Vahida Attar](#)

July 2018 - June 2022

GPA: 9.72/10

Institute Rank: 1/738

[Link to Transcripts](#)

## RESEARCH INTERESTS

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

## PUBLICATIONS

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### 1. DAIR: Data Augmented Invariant Regularization [\[arxiv\]](#)

Tianjian Huang, **Shaunak Halbe**, Chinnadhurai Sankar, Pooyan Amini, Satwik Kottur, Alborz Geramifard, Meisam Razaviyayn, Ahmad Beirami

- Under review at an A\* Machine Learning Conference

### 2. Localizing Moments in Surveillance Videos using Natural Language Queries [\[TBA\]](#)

**Shaunak Halbe et. al.**

- 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

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### Carnegie Mellon University

Robotics Institute Summer Scholar (RISS)

Pittsburgh, PA

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**  
*Research Intern*

Los Angeles, CA  
*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**  
*External Research Collaborator*

Menlo Park, CA  
*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**  
*Winter Research Intern*

Allahabad, India  
*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

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- 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 **1<sup>st</sup>** (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

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- 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

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- [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