SHAUNAK HALBE

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EDUCATION

College of Engineering Pune (COEP), India — *July 2018 - Present*
Senior Year Undergraduate — **GPA: 9.8 / 10**
Department of Computer Engineering — **Institute Rank: 1 / 700**
Link to Transcripts : Click Here

RESEARCH INTERESTS

Machine Learning	Adversarial Robustness, Domain Generalization & Adaptation
	Robust Optimization, Interpretability and Fairness
Multimodality	Embodied AI, Vision and Language Navigation
	Visual Question Answering and Visual Dialog
Natural Language Processing	Conversational 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*

· Under review at an A* Machine Learning Conference

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

· 2021 Robotics Institute Summer Scholars Working Papers Journal, **Carnegie Mellon University**

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

· Second Grand-Challenge and Workshop on Multimodal Language, **ACL 2020**
· Preliminary Version : Visual Question Answering & Dialog Workshop, **CVPR 2020**

RESEARCH EXPERIENCE

Carnegie Mellon University — Pittsburgh, PA
Research Scholar — *June 2021 - Present*

· 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.
· Currently working on developing 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 - Nov 2021*

· Worked under the guidance of Dr. Ahmad Beirami (Facebook 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.
· This method achieved results better than state-of-the-art problem specific approaches across a variety of tasks.

Bennett University   Greater Noida, India
Summer Research Intern   *April 2020 -July 2020*

· Studied the effects of well known adversaries like FGSM, PGD, CW on image classification models. Read and implemented several research papers that proposed defenses against these attacks.

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

1. Received the Alumni Association Award for two consecutive years on securing the **1st rank** across all departments in my institute (**1st** out of 700 candidates)

2. One of the 15 Viterbi-India Scholars selected by the Viterbi School of Engineering (USC) and the Indo-US Science and Technology Forum for pursuing a fully-funded research internship during Summer 2021

3. 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)

4. Received the Mitacs Globalink Research Award to conduct fully-funded research in Canada during Summer 2021 (declined)

5. Shortlisted for the highly-selective EPFL Summer Fellowship from 4500+ total applicants worldwide

6. Qualified for the national round of the coveted International Olympiad in Informatics (IOI) based on the performance in the zonal round

7. Selected for the ACL year-round mentorship program, created to support budding researchers in Natural Language Processing

SERVICE

1. Served as a reviewer for the CMU Robotics Institute Working Papers Journal, 2021

2. Participated as a Volunteer at **ACL 2020**, **EMNLP 2020**, **NeurIPS 2020** and **NAACL 2021**

3. Organized paper-reading sessions, delivered technical talks and mentored several undergraduate students in the capacity of Research Secretary of the Data Science Club at COEP