SHAUNAK HALBE

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EDUCATION

College of Engineering Pune (COEP) *July 2018 - June 2022*
Bachelor of Technology (Hons.) **GPA: 9.8 / 10**
Department of Computer Science & Engineering **Institute Rank: 1 / 738**
Link to Transcripts : Click Here

RESEARCH INTERESTS

Machine Learning	Adversarial Robustness, Domain Generalization & Adaptation Robust Optimization, Interpretability and Fairness
Multimodality	Embodied AI, Visual Question Answering, Visual Dialog, Video Understanding
Miscellaneous	Self Supervised Learning, Natural Language Processing, Robotics

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 as a full paper at an A* Machine Learning Conference

2. 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

3. 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**
· VizWiz Grand Challenge Workshop, **CVPR 2020**

RESEARCH EXPERIENCE

Carnegie Mellon University Pittsburgh, PA
Robotics Institute Summer Scholar (RISS) *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.
· 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 - Present*

· Worked under the guidance of Prof. Meisam Razaviyayn (USC) & Dr. Ahmad Beirami (Facebook AI Research) 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.

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.
· Explored the possibilites of extending the DenseCap model to locally curated datasets.

ACADEMIC ACHIEVEMENTS

- Received the Alumni Association Award for two consecutive years for being **1st** (among 738 students) across all departments, based on academic accomplishments
- 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 fully-funded research in Canada during Summer 2021
- Shortlisted for the highly-selective EPFL Summer Fellowship from 4500+ applicants worldwide
- Qualified for the national round of the coveted International Olympiad in Informatics (IOI) based on the performance in the zonal round
- Selected for the ACL year-round mentorship program, created to support budding researchers in Natural Language Processing

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**
- 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