AAMIR HASAN

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RESEARCH INTERESTS

Robotics, Human-Computer Interaction, Human Behavior Modeling, Perception, Computer Vision, Artificial Intelligence, and Machine Learning

EDUCATION

University of Illinois at Urbana-Champaign *2019 - Present*
Doctor of Philosophy in Electrical and Computer Engineering
Overall GPA: 3.75

University of Illinois at Urbana-Champaign *2016 - 2019*
Bachelor of Science in Computer Engineering
Graduated with High Honors
Overall GPA: 3.84

PUBLICATIONS

Journal Articles

- **A. Hasan**, P. Sriram, and K. Driggs-Campbell. Meta-path analysis on spatio-temporal graphs for pedestrian trajectory prediction. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2022
- Z. Huang, **A. Hasan**, K. Shin, R. Li, and K. Driggs-Campbell. Long-term pedestrian trajectory prediction using mutable intention filter and warp lstm. *IEEE Robotics and Automation Letters*, 6(2):542–549, April 2021
- Praveenkumar B. A., Srinivas A., **A. Hasan**, Anush S. K., Amogh M., Anirudh A., Devivaraprasad M., Rajashekar M., and Suresh K. A cloud-based technology solution for geo-spatial mapping of diseases among children for strategic healthcare planning in rural india. *ASCI Journal of Management*, 46:77 – 88, 2017

Under Review

- Y. Shen, N. Wijayaratne, P. Sriram, **A. Hasan**, P. Du, and K. Driggs-Campbell. Cocatt: A cognitive-conditioned driver attention dataset. In *Proceedings of the IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 2022

Undergraduate Thesis

- **A. Hasan**. Meta-path analysis for community detection in heterogeneous graphs with ground truth labels. May 2019

RESEARCH PROJECTS

Way-finding for the Visually Impaired 2021 - Present

- Building a robot way-finding assistant to aid visually impaired persons in navigating new indoor environments.

Modeling Communication between Drivers and Intelligent Vehicles 2021 - Present

- Analysing and developing the modes of communication between Drivers and Advanced Driver Assistance Systems (ADAS).

Meta-path Analysis on Spatio-Temporal Graphs for Trajectory Prediction 2020 - 2021

· Analysing meta-path based features on spatio-temporal graphs combined with a structural RNN structure to predict agent trajectories in autonomous scenes. Model achieved a boost of atleast 32% over all baselines. Submission accepted at ICRA 2022.

Meta-path Analysis for Community Detection in Heterogeneous Graphs with Groundtruth Labels 2018 - 2019

· Exploited meta-path based features by modifying the GeneMAPR algorithm to perform community detection of General Knowledge Graphs.

A Cloud-based Technology Solution for Geo-spatial Mapping of Diseases Among Children for Strategic Healthcare Planning in Rural India 2015 - 2016

· Developed an Android Application for Data Collection and a Web Application for Data Collection and Analysis for better visualization of disease spread in children living in rural India. The results were utilised by the Government of India to improve the lives of those affected.

EXPERIENCE

Google LLC May 2021 - August 2021
Software Engineering Intern *Mountain View, CA*

· Experimented with Pre-Training Multi-Modal BERT on unlabeled data to improve performance in extracting business titles from images
· Pre-processed data and created labels for custom pre-training tasks
· Analyzed the effect of pre-training using metrics such as train data size, training time, and improvement in precision-recall on the fine-tuning task
· Found that pre-training the model does improves performance on the fine-tuning task and that exploring other pre-training tasks would be useful.
· Culture Contribution: Organized an event for all interns to make memes on Memegen on International Intern Day

Planbook Innovation Inc. May 2016 - August 2016
Full Stack Web Development Intern *Bloomington, IL*

· Designed ToDo List and Sticky Note features for the company's main product, planbook.com.
· Designed a 'Period Schedule' feature for easier scheduling for teachers.
· The features designed went into production at the end of the internship and enhanced the user's experience with the website.

TEACHING EXPERIENCE

Graduate Teaching Assistant

ECE 391 - Computer Systems Engineering August 2019 - May 2021

· Head TA for Fall 2020 and Spring 2021.
· Taught discussion sections every week to help students with course material.
· Held supplemental sessions every week to enhance student knowledge in certain topics for the class.
· Designed and graded exam questions, and held office hours every week.
· Managed Piazza and Slack for intra-staff communication.
· Created an infrastructure for holding office hours and demos online on Discord with a fully functional bot to work around COVID-19.

· Received the 'Harold L. Oelson Undergraduate Teaching Award' for Fall 2019. Also nominated for Fall 2020 and Spring 2021.

Undergraduate Course Assistant

ECE 391 - Computer Systems Engineering August 2018 - May 2019

· Held office hours every week and assisted in grading weekly assignments and exams.

CS 461 - Introduction to Computer Security January 2019 - May 2019

· Helped hold office hours, and grade and write multiple choice exams questions

ECE 314 - Probability in Engineering Laboratory August 2017 - December 2018

· Grader for online Labs done on iPython Notebooks on topics related to probability and simulations

CS 126 - Software Design Studio January 2017 - May 2019

· Moderated Code Reviews for students every week and gave them feedback regarding coding style and formatting to improve their skills

COURSE WORK

Artificial Intelligence and Machine Learning

· ECE 448 - Artificial Intelligence
· ECE 446 - Machine Learning
· CS 598PS - Machine Learning for Signal Processing
· ECE 549 - Computer Vision
· CS 498SW - Introduction to Machine Perception

Robotics

· ECE 470 - Introduction to Robotics
· ECE 498SM - Principles of Safe Autonomy
· ECE 598SG - Learning Based Robotics
· ECE 598HRI - Human Robot Interaction

Signal Processing

· ECE 210 - Analog Signal Processing
· ECE 310 - Digital Signal Processing
· ECE 417 - Multimedia Signal Processing
· ECE 418 - Image & Video Signal Processing
· ECE 598PS - Machine Learning for Signal Processing

Theory

· ECE 374 - Introduction to Algorithms & Models of Computation
· ECE 534 - Random Processes
· ECE 515 - Control System Theory & Design

HONORS AND AWARDS

Harold L. Olesen Undergraduate Teaching Award Fall 2019

- Awarded to graduate students to recognize an outstanding effort in undergraduate teaching.
- Nominations are done by undergraduate students and reviewed by a committee comprised of the Student Advisory Committee and the Teaching Evaluation and Awards Committee.

Dean's List 2016 - 2018

- Awarded to students who are in the top 20% of their college class.

James Scholar Honors Program 2016 - 2019

TECHNICAL SKILLS

Computer Languages	Python, JAVA, C, C++, Javascript
Packages	PyTorch, TensorFlow, scikit-learn
Tools	Git, SVN, Vim
Software	Latex