Abhijat Biswas

Clementine
clementine.games

abhijat@clementine.games
cs.cmu.edu/∼abhijatb/

Education

Ph.D. Robotics 2024 — Carnegie Mellon University
Thesis: *Eye Gaze for Intelligent Driving*
Area of study: Gaze based driver models for intelligent assistance
Advisor: Henny Admoni

M.S. Robotics 2019 — Carnegie Mellon University
Thesis: *Human Torso Pose Forecasting for the Real World*
Area of study: Social Navigation
Advisors: Aaron Steinfeld & Henny Admoni

B.Tech. ECE 2016 — Indian Institute of Technology Guwahati
Thesis: *Visual Social Event Discovery*
Advisor: Prithwijit Guha

Experience

Founding AI Engineer — Clementine
Sept '24 - Aug '23
Working on structured AI voice-to-code agents to bring alive game companions

Research intern — Toyota Research Institute
Computer Vision
Project: Modeling drivers' risk perception to improve driving assistance systems
May '23 - Aug '23
Advisors: John Gideon & Guy Rosman

Research intern — Bosch Autonomous Driving Development @ UT Austin
Computer Vision
Project: Mitigating causal confusion in IL driving agents via gaze supervision
Jun '22 - Aug '22
Advisors: Alessandro Allievi & Scott Niekum

Publications

An asterisk (*) indicates co-first authorship —these authors contributed equally to the work

Pre-prints

P1 Liu, S., **Biswas, A.**, Admoni, H., and Lindlbauer, D. (2024). Towards gaze-based memory modeling in 2d and 3d virtual scenes. *Under review @ ACM Transactions on Applied Perception (TAP)*

Journal Articles

J3 Francis, A., Pérez-d'Arpino, C., Li, C., Xia, F., Alahi, A., Alami, R., Bera, A., **Biswas, A.**, and others (2024). Principles and guidelines for evaluating social robot navigation algorithms. *ACM Transactions on Human-Robot Interaction (THRI)*

J2 Gupta, P., **Biswas, A.**, Admoni, H., and Held, D. (2024). Object importance estimation using counterfactual reasoning for intelligent driving. *IEEE Robotics and Automation Letters*

J1 **Biswas, A.**, Wang, A., Silvera, G., Steinfeld, A., and Admoni, H. (2022). Socnavbench: A grounded simulation testing framework for evaluating social navigation. *ACM Transactions on Human-Robot Interaction (THRI)*, 11(3):1–24

Conference Papers

C8 **Biswas, A.**, Gupta, P., Khurana, S., Held, D., and Admoni, H. (2024). Modeling drivers' situational awareness from eye gaze for driving assistance. In *8th Annual Conference on Robot Learning*

C7 **Biswas, A.**, Pardhi, B. A., Chuck, C., Holtz, J., Niekum, S., Admoni, H., and Allievi, A. (2024). Gaze supervision for mitigating causal confusion in driving agents. In *Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems* (Also appeared at ARRH @CORL '22, best paper)

C6 Wang, A., Sato, D., Corzo, Y., Simkin, S., **Biswas, A.**, and Steinfeld, A. (2024). Tbd pedestrian data collection: Towards rich, portable, and large-scale natural pedestrian data. *IEEE International Conference on Robotics and Automation (ICRA)*

C5 **Biswas, A.** and Admoni, H. (2023). Characterizing drivers' peripheral vision via the functional field of view for intelligent driving assistance. In *IEEE Intelligent Vehicles Symposium* **(Oral)** (5% acceptance) (Also appeared as an Oral at CogSci 2023)

C4 Silvera*, G., **Biswas*, A.**, and Admoni, H. (2022). Dreyevr: Democratizing driving simulation in virtual reality for behavioural & interaction research. In *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*

C3 Newman*, B. A., **Biswas*, A.**, Ahuja, S., Girdhar, S., Kitani, K. K., and Admoni, H. (2020). Examining the effects of anticipatory robot assistance on human decision making. In *International Conference on Social Robotics*

C2 Sarvadevabhatla, R. K., Dwivedi, I., **Biswas, A.**, and Manocha, S. (2017). Sketchparse: Towards rich descriptions for poorly drawn sketches using multi-task hierarchical deep networks. In *Proceedings of the 25th ACM international conference on Multimedia*

C1 Shankar, T., **Biswas, A.**, and Arun, V. (2015). Development of an assistive stereo vision system. In *Proceedings of the international Convention on Rehabilitation Engineering & Assistive Technology*

Workshop Papers

W2 **Biswas, A.**, Gupta, P., Held, D., and Admoni, H. (2024). An interactive protocol to measure a driver's situational awareness. In *7th International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions at HRI 2024*

W1 **Biswas, A.**, Admoni, H., and Steinfeld, A. (2018). Human torso pose forecasting in the real world. In *RSS Workshop: Multimodal Perception and Control*

Awards & Honors

Best Paper Award, CoRL 2022 Workshop on Aligning Robot Representations with Humans	2022
Link Foundation Fellowship in Modeling, Simulation, and Training (5 *US PhDs annually*)	2022

Skills

Programming	proficient in Python; experienced in C++ and C#; familiar with Rust
Programming	proficient in Python; experienced in C++ & C#; familiar with Rust
Software packages	PyTorch, Unreal Engine, ROS, Unity, Godot

Professional Activities

Service Roles

Workshop Organizer, *1st Annual Social Robot Navigation: Advances and Evaluation* @ IEEE International Conference on Robotics and Automation (ICRA)	2022
Workshop Organizer, *All Things Attention: Bridging Different Perspectives on Attention* @ Conference on Neural Information Processing Systems (NeurIPS)	2022
Reviewer, IEEE Intelligent Vehicles Symposium (IV)	2024
Reviewer, ACM/IEEE International Conference on Human-Robot Interaction (HRI)	2021-24
Reviewer, HRI Pioneers workshop	2024
Reviewer, IEEE International Conference on Robotics and Automation (ICRA)	2023-25
Reviewer, IEEE Robotics and Automation Letters (RA-L)	2023
Reviewer, IEEE Conference on Virtual Reality and 3D User Interfaces (VR)	2023
Reviewer, International Journal of Social Robotics	2022
Reviewer, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)	2022
CMU SCS Dean's PhD Advisory Committee	2020-21

Invited Talks

Ethical perspectives of AI through contemporary gaming (panel), Ethics in AI Series, CMU	July 2021
Ethical and critical perspectives on Computer Vision in Graduate CV (16-720), CMU	2020, 2021
Visual social event discovery, Visual Computing Research Seminar, Cardiff University	June 2016

Mentorship

Pranay Gupta, CMU PhD (*Publications: J2, C8, W2)*	2022-24
Shreeya Khurana, CMU undergrad/MSML (*Publications: C8, now @ Stripe)*	2023-24
Badal Arun Pardhi, CMU Masters (*Publications: C7, now @ Apple)*	2022-23
Gustavo Silvera, CMU undergrad (*Publications: J1, C4, now @ Tesla)*	2020-23
Anastasiia Runova, CMU undergrad	2022-23

Teaching

16-720: Computer Vision (graduate) TA for Prof. Srinivasa Narsimhan, Carnegie Mellon University I planned and taught a broader impacts module to supplement this advanced graduate-level course, placing CV research in the broader societal context.	Fall 2020
16-867: Human-Robot Interaction (graduate) TA for Prof. Henny Admoni, Carnegie Mellon University	Spring 2019