Neeloy Chakraborty

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Goal: Pursuing career advancement in the fields of human-centered robotics and safe autonomous systems.

Education:

- **University of Illinois at Urbana Champaign** — Exp. May 2026
  MS/PhD in Electrical and Computer Engineering (Robotics and Artificial Intelligence Discipline) — GPA 3.83/4.00

Selected Publications:

- S. Liu, P. Chang, H. Chen, **N. Chakraborty**, K. Driggs-Campbell, — ICRA 2022
  "Learning to Navigate Intersections with Unsupervised Driver Trait Inference" — [arXiv:2109.06783] [video]

- S. Liu*, P. Chang*, W. Liang†, **N. Chakraborty†**, K. Driggs-Campbell, — ICRA 2021
  "Decentralized Structural-RNN for Robot Crowd Navigation with Deep Reinforcement Learning" — [arXiv:2011.04820] [video]

- **N. Chakraborty**, K. Driggs-Campbell, — IDEALS 2021 Undergrad Thesis
  "Hierarchical Self-Imitation Learning in Single-Agent Sparse Reward Environments" — [paper]

Selected Research Projects:

- **Koopman Models for Reinforcement Learning** — Summer 2022 –
  Advisors: Dr. Kaushik Balakrishnan, Dr. Devesh Upadhyay, and Professor Katherine Driggs-Campbell — University of Illinois
  Exploring benefits of combining Koopman theory with model-based reinforcement learning in complex environments.

- **Attenuated Stochastic Graph Model for Highway Vehicle Anomaly Detection** — Fall 2021 –
  Advisor: Professor Katherine Driggs-Campbell — University of Illinois
  Designing framework for identifying anomalies on the road conditioned on latent vehicle behaviors and lane structure.

- **Decentralized Vision-Based Robot Crowd Navigation** — Fall 2019 –
  Advisor: Professor Katherine Driggs-Campbell — University of Illinois
  Developing a novel network to guide a robot to reach a goal state while avoiding colliding with other agents. [website]

Selected Work Experience:

- **Research and Advanced Engineering Intern in Core AI/ML at Ford Motor Company** — Summer 2022
  Designing sample efficient model-free + model-based RL methods — Ford Motor Company
  Outperforming classical PID controllers by 41% in complex autonomous vehicle use case

- **Lab Teaching Assistant for Introduction to Robotics (ECE 470)** — Aug 2021 –
  Guiding students to program a UR3 arm with ROS and implement kinematics and computer vision — University of Illinois

- **Perception Engineering Intern in Autonomy Team at Brunswick i-Jet Lab** — Summer 2021
  Localizing swimmers around boats using filtering, tracking, and computer vision techniques — Brunswick
  Researching sensors and communicating with sensor companies to increase autonomy stack capabilities

- **Global Management Trainee Intern in Solutions at Anheuser Busch** — Summer 2019
  Implementing short- and long-term process solutions leveraging technology with an annual ROI of $1.5M — Anheuser Busch
  Identifying root causes of multi-million-dollar annual problem via Six Sigma LEAN exercises [website]

Languages/Tools: Python, PyTorch, C/C++, MATLAB, System Verilog, Git, Raspberry Pi, ROS, OpenCV, Simulink, Altera FPGAs
Coursework: Artificial Intelligence, Deep Learning, Reinforcement Learning, Robotics, Safe Autonomy, Control Systems, Algorithms