DIPTANIL CHAUDHURI

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Education

Texas A & M University, College Station
Ph.D. Computer Science (GPA: 3.9/4.0) *Aug. 2017 – May 2023 (Expected)*
Krishna Institute of Engineering and Technology, Ghaziabad
B.Tech. (Hons.), Electronics and Communication Engineering *Aug. 2012 – Jul. 2016*

Relevant Skills

- **Languages:** Python, C++, C#, Embedded C, MATLAB, JavaFX, HTML.
- **Packages:** Unity, GIT, Machine Learning, Reinforcement Learning, Natural Language Processing, ATMega microcontrollers, Raspberry Pi.

Relevant Coursework

Computer Architecture, Artificial Intelligence, Theory of Computability, Natural Language Processing, Software Engineering, Machine Learning, Randomized Algorithm, Computer Supported Collaborative Work, Digital Design, Signals and Systems, Microprocessors, Integrated Circuits, Advance Semiconductor Devices, Digital Signal Processing, VLSI Design.

Experience

Graduate Research Assistant
Distributed AI Robotics Lab, Texas A& M University, College Station *Sep. 2017 – Present*
- Designed and analyzed planning problems for multi-agent systems.
- Designed and analyzed economic theories for multi-agent crowdsouring systems.

Graduate Teaching Assistant
Texas A& M University, College Station *Sep. 2019 – May 2020*
- Mentored multiple groups of student projects and taught lecture on Natural Language Processing and Temporal Logic.

Graduate Research Fellow
Mays Innovation Research Center, College Station *Jun. 2018 – Aug. 2019*
- Analyzed incentivisation theory and mechanism design for crowdsourced markets.
- Mentored undergraduate students on topics of crowdsourcing.

Technical Consultant
D. Devshi Pvt. Ltd., Ghaziabad *Aug. 2016 – Jan. 2017*
- Advised committee on new consumer home automation electronics products based on market research.

Embedded System Engineer
Smart Joules Pvt. Ltd., Delhi *Jun. 2016 – Aug. 2016*
- Designed low-cost PLC module using Atmel ATMega16 microprocessor.
- Implemented PLC embedded software using embedded C via Atmel Studio.
- Designed an efficient data logging hardware for monitoring various parameters of a hospital environment.

Co-founder and Chairperson
Dinobots Collegiate Club, KIET, Ghaziabad *Aug 2013 - May 2016*
- Founded collegiate club with the vision to take part in national robotics competitions.
- Achieved National runner-up position in ROBOCON 2015.
- Designed robotic platforms for school students using Atmel ATmega16 and ATmega2560.

Project Engineer
Sapro Robotics Pvt. Ltd., Ghaziabad *Aug. 2013 – Nov. 2015*
- Project leader for commercial GSM based Water-level Monitor, and Home Automation System circuit using Atmel ATmega16.
- Conducted workshop on embedded C.

Research Projects

Multi-commodity routing with stateful consumer demands
Skills: Planning, Formal Methods, Logistics, Reinforcement Learning *Jan. 2022 – Present*
- Designed Markov Chain model for modeling consumer demands.
- Formulated approximate solution methods that increase solution time-efficiency.

Coordinated Event Observation for Structured Narratives
Skills: Planning, Formal Methods, Multi-Robot Coordination *Jan. 2020 – Present*
- Designed Markov Chain model for modeling real-world events.
- Formulated k-order Markov model to quantify the artistic nature of video cinematography.

Crowdsourcing with time-extended, open-ended, and creative tasks
Skills: Planning, Game Theory, Mechanism Design *Aug. 2018 – Jan. 2020*
- Designed economic model for multi-agent incentives.
- Analyzed theoretical behaviour model of agents in a Nash equilibrium setting.
- Implemented web-platform using Django, CSS, and JavaFX for real-world analysis of the theoretic model.

Group formation and match-making in a multi-agent system
Skills: Game Theory, Mechanism Design *Aug. 2017 – Jan. 2020*
- Designed model for multi-agent coordination for creative open-ended tasks.
- Developed game-theoretic algorithm to match agents into groups under preferential constraints.

Other Relevant Projects

Bioimpedance meter
KIET, Ghaziabad *Aug 2015 – Apr 2016*
- Designed filter and amplifier circuit to extract the bioimpedance signal.
- Implemented python GUI (Tkinter) to view the signals and also extract relevant information from signal.

Intelligent Traffic Monitoring and Control System
Ghaziabad Development Authority (Govt. Organization), Ghaziabad *Mar 2015 – Jun 2015*
- Designed and analyzed neural-fuzzy algorithm to improve the traffic monitoring and control system.

Badminton Playing Robot (ROBOCON 2015)
Dinobots Collegiate Club, KIET, Ghaziabad *Aug. 2014 – Mar. 2015*
- Lead a group of 20 peer students.
- Designed sensor circuits and implemented path finding algorithm for autonomous operation of the robot.
- Achieved runner-up position in national level robotics competition.

Quadcopter Motion Planning
KIET, Ghaziabad *Dec 2014 – Mar 2015*
- Implemented 3D shortest path finding algorithm with obstacle avoidance.

Vibration Detector (using accelerometer)
KIET, Ghaziabad *Feb 2015 – Mar 2015*
- Implemented Kalman-filter algorithm to extract vibrational data from the readings of an accelerometer.

Parent and Child Task Robots (ROBOCON 2014)
Dinobots Collegiate Club, KIET, Ghaziabad *Oct 2013 – Mar 2014*
- Designed control circuits using ATmel ATMega2560 and ATMega16.
- Implemented path finding algorithm for autonomous operation of the robot.

Recent Publications

- Diptanil Chaudhuri, and Dylan A. Shell. "A causal decoupling approach to efficient planning for logistics problems with stateful stochastic demand" In *Proceedings of International Conference on Robotics and Automation (ICRA)*, 2023. (Submitted).
- Rhema Ike, Romero Omar, Diptanil Chaudhuri, Hazhar Rahmani, Dylan A. Shell, Jason M. O'Kane, and Aaron T. Becker. "Using a Heterogeneous Team of Robots for Narrative Observation." In *Proceedings of International Conference on Robotics and Automation (ICRA)*, 2023. (Submitted).
- Diptanil Chaudhuri, Rhema Ike, Hazhar Rahmani, Dylan A. Shell, Aaron T. Becker, and Jason M. O'Kane. "Conditioning Style on Substance: Plans for Narrative Observation." In *Proceedings of International Conference on Robotics and Automation (ICRA)*, 2021.
- Diptanil Chaudhuri, Hazhar Rahmani, Dylan A. Shell, and Jason M. O'Kane. "Tractable Planning for Coordinated Story Capture: Sequential Stochastic Decoupling." In *Proceedings of International Symposium on Distributed Autonomous Robotic Systems (DARS)*, 2021.

For a list of all publications please visit Google Scholar