Rohan Chandra

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I am a 4th year PhD student at University of Maryland, College Park advised by Prof. Dinesh Manocha. My research is broadly in Autonomous Driving.

Education

Ph.D. in Computer Science — **University of Maryland, College Park**
CGPA: 3.8/4.0 — *August 2018 - Present*

M.S. in Computer Science — **University of Maryland, College Park**
CGPA: 3.8/4.0 — *August 2016 - May 2018*

B.Tech. in ECE — **Delhi Technological University, New Delhi**
August 2012 - July 2016

Internships

- **NVIDIA** — **Santa Clara, CA**
  Applied Research Intern, Autonomous Driving (Prediction) — *Summer'21 (Remote)*
  Improved ego-vehicle trajectory and behavior prediction via ego-goal conditioning by upto 50%. Improved navigation in particularly hard cases like U-turns and left turns–cases that the model struggled with.

Scholarships

- **(2021)** selected as part of the 2020-2021 cohort ($\mathbf{22}$ selected out of approximately $\mathbf{5,000}$ doctoral students at UMD) of **Future Faculty Fellows**.
- **(2020)** Awarded the **Summer Research Fellowship** by The Graduate School, UMD.
- **(2018)** Recognized as a **top writer** on Quora with over 1 million views and 385 shares on my posts and answers.

Publications

Autonomous Driving

1. **Rohan Chandra**, Mingyu Wang, Mac Schwager, Dinesh Manocha. Game-Theoretic Planning for Risk-Aware Human Drivers. Under Review in **ICRA 2022**.
2. **Rohan Chandra**, Mridul Mahajan, Rahul Kala, Rishitha Palugulla, Chandrababu Naidu, Alok Jain, and Dinesh Manocha. METEOR: A Massive Dense & Heterogeneous Behavior Dataset for Autonomous Driving. Under Review in **ICRA 2022**.
3. **Rohan Chandra**, Dinesh Manocha. GamePlan: Game-Theoretic Multi-Agent Planning with Human Drivers at Intersections, Roundabouts, and Merging. Under Review in **ICRA/RAL 2022**.
4. **Rohan Chandra**, Aniket Bera, Dinesh Manocha. Using Graph-Theoretic Machine Learning to Predict Human Driver Behavior. Under Review in **IEEE Transactions on Intelligent Transportation Systems**.
5. **Rohan Chandra**, Uttaran Bhattacharya, Trisha Mittal, Aniket Bera, Dinesh Manocha."CMetric: A Driving Behavior Measure Using Centrality Functions." In Proceedings of the **International Conference on Intelligent Robots and Systems(IROS), 2020**
6. **Rohan Chandra**, Uttaran Bhattacharya, Trisha Mittal, Xiaoyu Li, Aniket Bera, Dinesh Manocha."GraphRQI: Classifying Driver Behaviors Using Graph Spectrums."In Proceedings of the **IEEE International Conference on Robotics and Automation, 2020**
7. **Rohan Chandra**, Tianrui Guan, Srujan Panuganti, Trisha Mittal, Uttaran Bhattacharya, Aniket Bera, Dinesh Manocha. Forecasting Trajectory and Behavior of Road-Agents using Spectral Clustering in Graph-LSTMs. In Proceedings of the **IEEE Robotics and automation Letters (RA-L), 2020**. Also, in Proceedings of the **International Conference on Intelligent Robots and Systems(IROS), 2020**
8. **Rohan Chandra**, Uttaran Bhattacharya , Tanmay Randhavane, Aniket Bera, and Dinesh Manocha. RoadTrack: Tracking Road Agents in Dense and Heterogeneous Environments. In Proceedings of the **IEEE International Conference on Robotics and Automation, 2020**
9. **Rohan Chandra**, Uttaran Bhattacharya, Christian Roncal, Aniket Bera, Dinesh Manocha. RobustTP: End-to-End Trajectory Prediction for Heterogeneous Road-Agents in Dense Traffic with Noisy Sensor Inputs. In **CSCS 2019 (Oral)**.
10. **Rohan Chandra**, Uttaran Bhattacharya, Aniket Bera, and Dinesh Manocha. DensePeds: Pedestrian Tracking in Dense Crowds Using Front-RVO and Sparse Features. In **IROS 2019**.
11. **Rohan Chandra**, Uttaran Bhattacharya, Aniket Bera, and Dinesh Manocha. TraPHic: Predicting Trajectories of Road-Agents in Dense and Heterogeneous Traffic. In **CVPR 2019**.

12. Angelos Mavrogiannis, **Rohan Chandra**, Dinesh Manocha. B-GAP: Behavior-Guided Action Prediction for Autonomous Navigation. Under Review in **ICRA/RAL 2022**.
13. Tianrui Guan, Jun Wang, Shiyi Lan, **Rohan Chandra**, Zuxuan Wu, Larry Davis, Dinesh Manocha. M3DeTR: Multi-representation, Multi-scale, Mutual-relation 3D Object Detection with Transformers. In **IEEE Winter Conference on Applications of Computer Vision (WACV 2022)**.
14. Divya Kothandaraman, **Rohan Chandra**, Dinesh Manocha. SS-SFDA: Self-Supervised Source-Free Domain Adaptation for Road Segmentation in Hazardous Environments. In **ICCV 2021**.
15. Divya Kothandaraman, **Rohan Chandra**, Dinesh Manocha. BoMuDA: Boundless Multi-Source Domain Adaptive Segmentation in Unconstrained Environments. In **ICCV 2021**.
16. AJ Sathyamoorthy, Jing Liang, Utsav Patel, Tianrui Guan, **Rohan Chandra**, Dinesh Manocha. Densecavoid: Real-time navigation in dense crowds using anticipatory behaviors. In **RAL/ICRA 2020**.
17. Tianrui Guan, Divya Kothandaraman, **Rohan Chandra**, Dinesh Manocha. GANav: Group-wise Attention Network for Classifying Navigable Regions in Unstructured Outdoor Environments. Under Review in **ICRA/RAL 2022**.
18. Tianrui Guan, Divya Kothandaraman, **Rohan Chandra**, Dinesh Manocha. GANav: Group-wise Attention Network for Classifying Navigable Regions in Unstructured Outdoor Environments. Under Review in **ICRA/RAL 2022**.

Affective Computing

1. Trisha Mittal, Uttaran Bhattacharya, **Rohan Chandra**, Aniket Bera, Dinesh Manocha. "Emotions Don't Lie: An Audio-Visual Deepfake Detection Method Using Affective Cues". In **ACM Multimedia (ACMMM), 2020.**
2. Uttaran Bhattacharya, Christian Roncal, Trisha Mittal, **Rohan Chandra**, Aniket Bera, Dinesh Manocha. "Take an Emotion Walk: Perceiving Emotions from Gaits Using Hierarchical Attention Pooling and Affective Mapping". In **European Conference on Computer Vision (ECCV), 2020.**
3. Trisha Mittal, Uttaran Bhattacharya, **Rohan Chandra**, Aniket Bera, Dinesh Manocha. "M3ER: Multiplicative Multimodal Emotion Recognition Using Facial, Textual, and Speech Cues." In Proceedings of the **Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-20).** (Oral)
4. Uttaran Bhattacharya, Trisha Mittal, **Rohan Chandra**, Tanmay Randhavane, Aniket Bera, Dinesh Manocha. "STEP: Spatial Temporal Graph Convolutional Networks for Emotion Perception from Gaits." In Proceedings of the **Thirty-Second AAAI Conference on Artificial Intelligence (AAAI-20).**
5. Trisha Mittal, Pooja Guhan, Uttaran Bhattacharya, **Rohan Chandra**, Aniket Bera, Dinesh Manocha. "EmotiCon: Context-Aware Multimodal Emotion Recognition using Frege's Principle". In **Computer Vision and Pattern Recognition (CVPR), 2020.**

Teaching Experience

- **CMSC 250: Discrete Mathematics** — **University of Maryland, College Park**
  Taught by Jason Filippou — *Fall'17 and Spring'18*
- **CMSC 131: Introduction to Programming** — **University of Maryland, College Park**
  Taught by Fawzi Emad — *Spring'17*
- **CMSC 417: Computer Networks** — **University of Maryland, College Park**
  Taught by Ashok Agrawala — *Fall'16*

Professional Activities

- Invited Talks:
  - **RSS'21:** Perception and Control for Autonomous Navigation in Crowded, Dynamic Environments Workshop.
  - **Maryland Robotics Center** Student Seminar.
- Invited to serve on the program committee of the **ICCV'21 Workshop on Multi-Agent Interaction and Relational Reasoning**.
- Served as a reviewer for the following conferences and journals: CVIU'18 -'20, IJCAI'19, CoRL'19, CVPR'20 -'21, AAAI'20 -'21, ICRA'20 -'21, IROS'19 -'20, RAL'20 -'21, NeurIPS'20, ICLR'21, ICML'21, ICCV'21
- **2017-2018:** Served as a reviewer on the UMD CS graduate admissions committee.

Diversity and Inclusion

- **AI4ALL 2021:** Led a 2 week project for 5-6 high school students. Introduced them to various aspects of machine learning and artificial intelligence.
- **NYU AI School 2021:** Teaching basic machine learning and programming and discussing a career in machine learning research with students from underrepresented minorities.
- **AI4ALL 2020:** Teaching basic machine learning and programming and discussing a career in machine learning research with students from underrepresented minorities.