

Kashyap Chitta

Doctoral Researcher

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Education

2019 – Now	University of Tübingen, Germany <i>PhD in Computer Science; Autonomous Vision Group</i> <ul style="list-style-type: none">• <i>Advisor:</i> Prof. Andreas Geiger• <i>Scholarship:</i> International Max Planck Research School for Intelligent Systems (IMPRS-IS)• <i>Tentative Thesis Title:</i> Driving with Attention• <i>Research Interests:</i> Imitation Learning, Autonomous Driving, Data-driven Simulation, Model-based Reinforcement Learning, Offline Reinforcement Learning, Attention-based Architectures
2017 – 2018	Carnegie Mellon University, USA <i>Master of Science in Computer Vision</i> <ul style="list-style-type: none">• <i>Advisor:</i> Prof. Martial Hebert• <i>Thesis project:</i> Exploiting Synthetic Data for Street Scene Segmentation• <i>GPA:</i> 4.15/4.33• <i>Selected courses:</i> Visual Learning and Recognition, Deep Reinforcement Learning, Geometry Based Methods in Vision, Statistical Techniques in Robotics
2013 – 2017	RV College of Engineering, India <i>Bachelor of Engineering in Electronics and Communication</i> <ul style="list-style-type: none">• <i>Thesis project:</i> Monocular Visual SLAM with a Rotating Mirror• <i>GPA:</i> 9.11/10.0

Internships

Jan 2019 – Aug 2019	NVIDIA, Santa Clara, USA <i>Deep Learning Intern; AI Infrastructure</i> <ul style="list-style-type: none">• <i>Mentor:</i> Dr. José M. Álvarez• <i>Role:</i> Research and development of an automatic dataset curation engine for the internal MagLev AI training and inference infrastructure, involving collaborations across multiple groups, which resulted in two publications.
May 2018 – Aug 2018	NVIDIA, Santa Clara, USA <i>Software Intern; AI Infrastructure</i> <ul style="list-style-type: none">• <i>Mentors:</i> Dr. José M. Álvarez, Dr. Adam Lesnikowski• <i>Role:</i> Research on approximating Bayesian Neural Networks for Active Learning which resulted in a publication, and was subsequently incorporated into the data annotation platform for the autonomous vehicles group.
Jun 2016 – Jul 2016	Tata Consultancy Services, Bangalore, India <i>Research Intern; Nozomi Embedded Innovation Laboratory</i> <ul style="list-style-type: none">• <i>Mentor:</i> Dr. Apurba Das• <i>Role:</i> Developed a console application for facial expression analysis from live video, incorporated as part of a driver mood detection module in the internal advanced driver-assistance system software.

Jun 2015 –
Jul 2015

Indian Space Research Organization, Bangalore, India

Project Trainee; Laboratory for Electro-Optics Systems

- *Mentor:* Mr. V.V. Ramana Reddy
- *Role:* Designed, developed and calibrated a prototype photometer for stereoscopic camera emergency shutter control on the *Chandrayaan-II* moon rover.

Publications

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| 2022 | <p>[1] K. Chitta, A. Prakash, B. Jaeger, Z. Yu, K. Renz, and A. Geiger, “Transfuser: Imitation with transformer-based sensor fusion for autonomous driving,” <i>Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)</i>, 2022.</p> <p>[2] N. Hanselmann, K. Renz, K. Chitta, A. Bhattacharyya, and A. Geiger, “King: Generating safety-critical driving scenarios for robust imitation via kinematics gradients,” in <i>European Conference on Computer Vision (ECCV)</i>, 2022.</p> <p>[3] K. Renz, K. Chitta, O.-B. Mercea, A. S. Koepke, Z. Akata, and A. Geiger, “Plant: Explainable planning transformers via object-level representations,” in <i>Conference on Robot Learning (CoRL)</i>, 2022.</p> |
| 2021 | <p>[4] K. Chitta, J. M. Alvarez, E. Haussmann, and C. Farabet, “Training data subset search with ensemble active learning,” <i>Transactions on Intelligent Transportation Systems (T-ITS)</i>, 2021.</p> <p>[5] K. Chitta, A. Prakash, and A. Geiger, “Neat: Neural attention fields for end-to-end autonomous driving,” in <i>International Conference on Computer Vision (ICCV)</i>, 2021.</p> <p>[6] A. Prakash, K. Chitta, and A. Geiger, “Multi-modal fusion transformer for end-to-end autonomous driving,” in <i>Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2021.</p> <p>[7] A. Sauer, K. Chitta, J. Muller, and A. Geiger, “Projected gans converge faster,” in <i>Advances in Neural Information Processing Systems (NeurIPS)</i>, 2021.</p> <p>[8] M. A. Weis, K. Chitta, Y. Sharma, W. Brendel, M. Bethge, A. Geiger, and A. S. Ecker, “Benchmarking unsupervised object representations for video sequences,” <i>Journal of Machine Learning Research (JMLR)</i>, 2021.</p> |
| 2020 | <p>[9] A. Behl, K. Chitta, A. Prakash, E. Ohn-Bar, and A. Geiger, “Label efficient visual abstractions for autonomous driving,” in <i>International Conference on Intelligent Robots and Systems (IROS)</i>, 2020.</p> <p>[10] K. Chitta, J. M. Alvarez, and M. Hebert, “Quadtree generating networks: Efficient hierarchical scene parsing with sparse convolutions,” in <i>Winter Conference on Applications of Computer Vision (WACV)</i>, 2020.</p> <p>[11] E. Haussmann, M. Fenzi, K. Chitta, J. Ivanecky, H. Xu, D. Roy, A. Mittel, N. Koumchatzky, C. Farabet, and J. M. Alvarez, “Scalable active learning for object detection,” in <i>Intelligent Vehicles Symposium (IV)</i>, 2020.</p> <p>[12] E. Ohn-Bar, A. Prakash, A. Behl, K. Chitta, and A. Geiger, “Learning situational driving,” in <i>Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2020.</p> <p>[13] A. Prakash, A. Behl, E. Ohn-Bar, K. Chitta, and A. Geiger, “Exploring data aggregation in policy learning for vision-based urban autonomous driving,” in <i>Conference on Computer Vision and Pattern Recognition (CVPR)</i>, 2020.</p> |
| 2018 | <p>[14] K. Chitta, “Targeted kernel networks: Faster convolutions with attentive regularization,” in <i>Workshop on Compact and Efficient Feature Representation and Learning in Computer Vision (CEFRL)</i>, <i>European Conference on Computer Vision (ECCV)</i>, 2018.</p> <p>[15] K. Chitta, J. M. Alvarez, and A. Lesnikowski, “Deep probabilistic ensembles: Approximate variational inference through kl regularization,” in <i>Workshop on Bayesian Deep Learning (BDL)</i>, <i>Conference on Neural Information Processing Systems (NeurIPS)</i>, 2018.</p> |

- 2016 | [16] **K. Chitta** and N. N. Sajjan, “A reduced region of interest based approach for facial expression recognition from static images,” in *Region-10 Conference (TENCON)*, 2016.

Teaching and Supervision

Sep 2022 – Feb 2023	Master Thesis Advisor <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Student:</i> Jovan Cicvaric • <i>Thesis:</i> Dataset Distillation for Autonomous Driving
Apr 2022 – Sep 2022	Practical Machine Learning Project Advisor <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Students:</i> Luis Winckelmann and Alexander Braun • <i>Research Project:</i> Infraction Visualization and Clustering for Improved Agent Evaluation in CARLA
Apr 2022 – Jul 2022	Teaching Assistant <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Course:</i> Autonomous Vision (Seminar) • <i>Students:</i> 6 teams of 2 students
Sep 2021 – Dec 2021	Independent Research Project Advisor <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Student:</i> Pavan Teja Varigonda • <i>Research Project:</i> Learning to Simulate for Out-Of-Distribution Semantic Segmentation
Mar 2021 – Sep 2021	Master Thesis Advisor <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Student:</i> Bernhard Jaeger • <i>Thesis:</i> Expert Drivers for Autonomous Driving
Apr 2021 – Jul 2021	Teaching Assistant <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Course:</i> Computer Vision (Lecture) • <i>Students:</i> 150
Oct 2020 – Apr 2021	Master Thesis Advisor <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Student:</i> Micha Schilling • <i>Thesis:</i> Visual Abstractions for Autonomous Driving
Oct 2019 – Feb 2020	Teaching Assistant <ul style="list-style-type: none"> • <i>Institution:</i> University of Tübingen, Germany • <i>Course:</i> Self-Driving Cars (Lecture) • <i>Students:</i> 80

Awards

- 2021 |
- Our self-driving approach TransFuser ranked second on the 2021 CARLA Autonomous Driving Challenge, out of 100+ participating teams.
 - Our new computer vision lecture won the 2021 CS teaching award.

- Our self-driving approach NEAT ranked second on the 2020 CARLA Autonomous Driving Challenge, out of 45 participating teams.

Academic Activities

Reviewing

- *Journal Reviewer:* T-PAMI, IJCV, T-ITS, T-IV
- *Conference Reviewer:* CVPR, ECCV, ICRA, IROS, IV

Invited Talks

- Imitation with Transformer-based Sensor Fusion for Autonomous Driving. *University of Toronto AI in Robotics Seminar (Virtual)*, 28.03.2022.
- Imitation with Transformer-based Sensor Fusion. *NeurIPS Workshop on Machine Learning for Autonomous Driving (Virtual)*, 13.12.2021.

References

Prof. Andreas Geiger. Professor, Dept. of Computer Science, University of Tübingen. andreas.geiger@tue.mpg.de
Dr. José M. Álvarez. Senior Research Scientist, NVIDIA. josea@nvidia.com
Prof. Eshed Ohn-Bar. Professor, Dept. of Electrical and Computer Engineering, Boston University. eohnbar@bu.edu
Prof. Martial Hebert. Dean, School of Computer Science, Carnegie Mellon University. hebert@cs.cmu.edu