

# Mansur Maturidi Arief

*Postdoctoral Scholar, Stanford Intelligent Systems Laboratory (SISL)*

Aeronautics and Astronautics, Stanford University

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## EDUCATION

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Carnegie Mellon University, Pittsburgh PA, USA <i>Ph.D. in Mechanical Engineering</i>	2018–2023
University of Michigan, Ann Arbor MI, USA <i>M.S.E. in Industrial and Operations Engineering</i>	2016–2018
Sepuluh Nopember Institute of Technology (ITS), Surabaya, Indonesia <i>B.E. in Industrial and Systems Engineering</i>	2010–2014

## EMPLOYMENT & INTERNSHIPS

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Stanford Intelligent Systems Lab (SISL), Stanford University <i>Postdoctoral Researcher, supervised by Dr. Mykel Kochenderfer</i>	2023-present
CR/RSI1-NA, Robert Bosch LLC (Bosch) <i>Machine Learning Research Intern, supervised by Dr. Ji Eun Kim</i>	2021
Transportation Research Institute, University of Michigan <i>Research Assistant, supervised by Dr. Ding Zhao</i>	2017–2018
Innovation and Business Venture Agency, ITS <i>Associate Consultant, supervised by Dr. I Ketut Gunarta</i>	2015–2016
Logistics and Supply Chain Management Laboratory, ITS <i>Research Assistant, supervised by Prof. I Nyoman Pujawan</i>	2012–2016
Center for Transportation Research, ITS <i>Research Assistant, supervised by Prof. Iwan Vanany</i>	2012–2014

## TEACHING EXPERIENCE

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■ <i>Teaching Assistant, Trustworthy AI Autonomy (24784), Carnegie Mellon University</i>	2021
■ <i>Teaching Assistant, Intro to Scientific Computing (24781), Carnegie Mellon University</i>	2020
■ <i>Teaching Assistant, Supply Chain Management, IndonesiaX</i>	2016
■ <i>Teaching Assistant, Distribution Management, ITS</i>	2014
■ <i>Teaching Assistant, Industrial Systems Design, ITS</i>	2013

## AWARDS & CREDENTIALS

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■ <i>Deep Learning Specialization, DeepLearning.ai</i>	2021
■ <i>Best Poster, Michigan Student Symposium on Interdisciplinary Statistical Sciences (MSSISS), Univ. of Michigan</i>	2018
■ <i>Best Paper, Power and Energy Symposium, International Conference on Science and Technology (ICST)</i>	2018
■ <i>MicroMasters in Supply Chain Management, MITx on edX</i>	2018
■ <i>LPDP Scholarship Awardee, Indonesian Endowment Fund for Education</i>	2016
■ <i>1<sup>st</sup> Place, National Industrial Engineering Challenge, University of Andalas</i>	2014
■ <i>2<sup>nd</sup> Place, National Industrial Engineering Challenge on Small and Medium Enterprises, University of Brawijaya</i>	2014
■ <i>5<sup>th</sup> Place (Top 1%), National Industrial Engineering Challenge, University of Indonesia</i>	2013

## PUBLICATIONS

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- **Arief, Mansur**, Zhepeng Cen, Huan Zhang, Henry Lam, Ding Zhao. "CERTIFY: Computationally Efficient Rare-failure Certification of Autonomous Vehicles." *Under review*.
- **Arief, Mansur**, Zhepeng Cen, Zhenyuan Liu, Zhiyuan Huang, Henry Lam, Bo Li, Ding Zhao. "Test Against High-Dimensional Uncertainties: Accelerated Evaluation of Autonomous Vehicles with Deep Importance Sampling." *Under review*.
- Ding, Wenhao, Chejian Xu, **Mansur Arief**, Haohong Lin, Bo Li, Ding Zhao. "A Survey on Safety-Critical Driving Scenario Generation – A Methodological Perspective." *IEEE Transactions on Intelligent Transportation System*. IEEE, 2023
- **Arief, Mansur**, Yuanlu Bai, Shengyi He, Wenhao Ding, Zhiyuan Huang, Henry Lam, Bo Li, Ding Zhao. "Certifiable Deep Importance Sampling for Rare-Event Simulation of Black-Box Systems." *Under second-round review for potential publication in the Operations Research journal*.
- Abdussyukur, Hafizh, Mahmud Dwi Sulistiyo, Ema Rachmawati, **Mansur Arief**. "Semantic Segmentation for Identifying Road Surface Damages Using Lightweight Encoder-Decoder Network." *Proceedings of the 2022 International Conference on Advanced Creative Networks and Intelligent Systems (ICACNIS)*. IEEE, 2022
- **Arief, Mansur**, Zhepeng Cen, Zhenyuan Liu, Zhiyuan Huang, Henry Lam, Bo Li, Ding Zhao. "Certifiable Evaluation for Autonomous Vehicle Perception Systems using Deep Importance Sampling (Deep IS)." *Proceedings of the 25<sup>th</sup> International Conference on Intelligent Transportation System (ITSC)*. IEEE, 2022.
- Nissa Amilia, Zulkifli Palinrungi, **Mansur Arief**, and Iwan Vanany. "Designing an Optimized Electric Vehicle Charging Station Infrastructure for Urban Area: A Case study from Indonesia." *Proceedings of the 25<sup>th</sup> International Conference on Intelligent Transportation System (ITSC)*. IEEE, 2022.
- Ziyad, Muhammad, Kenrick Tjandra, Zulvah, Mushonnifun Faiz Sugihartanto, and **Mansur Arief**. "An Optimized and Safety-aware Maintenance Framework: A Case Study on Aircraft Engines." *Proceedings of the 25<sup>th</sup> International Conference on Intelligent Transportation System (ITSC)*. IEEE, 2022.
- **Arief, Mansur**, Zhiyuan Huang, Guru KS Kumar, Yuanlu Bai, Shengyi He, Wenhao Ding, Henry Lam, and Ding Zhao. "Deep Probabilistic Accelerated Evaluation: A Robust Certifiable Rare-Event Simulation Methodology for Safety-Critical Black-Box Autonomy." *Proceedings of the 24th International Conference on Artificial Intelligence and Statistics (AISTATS)*. PMLR: Volume 130, 2021.
- Arief, Hasan A., **Mansur Arief**, Guilin Zhang, Ulf Indahl, Håvard Tveite, and Ding Zhao. "SAnE: Smart annotation and evaluation tools for point cloud data". In *IEEE Access*. IEEE, 2020.
- Chen, Rui, **Mansur Arief**, Weiyang Zhang, and Ding Zhao. "How to Evaluate Self-Driving Testing Ground? A Quantitative Approach." *IEEE Transactions on Intelligent Transportation System*, DOI: 10.1109/TITS.2020.2991757. IEEE, 2020.
- Huang, Zhiyuan, **Mansur M. Arief**, Henry Lam, and Ding Zhao. "Assessing Modeling Variability in Autonomous Vehicle Accelerated Evaluation." *Proceedings of the 22<sup>nd</sup> International Conference on Intelligent Transportation System (ITSC)*. IEEE, 2019.
- Guo, Yaohui, Vinay Varma Kalidindi, **Mansur Arief**, Wenshuo Wang, Jiacheng Zhu, Huei Peng, and Ding Zhao. "Modeling Multi-Vehicle Interaction Scenarios Using Gaussian Random Field." *Proceedings of the 22<sup>nd</sup> International Conference on Intelligent Transportation System (ITSC)*. IEEE, 2019.
- Liu, Zuxin, **Mansur Arief**, and Ding Zhao. "Where Should We Place LiDARs on the Autonomous Vehicle? An Optimal Design Approach." *Proceedings of the 2019 International Conference on Robotics and Automation (ICRA)*, pp. 2793-2799. IEEE, 2019.
- Arief, Hasan A., **Mansur Arief**, Manoj Bhat, Ulf Indahl, Håvard Tveite, and Ding Zhao. "Density-Adaptive Sampling for Heterogeneous Point Cloud Object Segmentation in Autonomous Vehicle Applications." *Proceedings of the 2019 IEEE Conference on Computer Vision and Pattern Recognition Workshops*, pp. 26-33. 2019.
- Huang, Zhiyuan, Yaohui Guo, **Mansur Arief**, Henry Lam, and Ding Zhao. "A versatile approach to evaluating and testing automated vehicles based on kernel methods." *Proceedings of the 2018 Annual American Control Conference (ACC)*, pp. 4796-4802. IEEE, 2018.

- Oktavian, Muhammad Rizki, Diana Febrita, and **Mansur Arief**. "Cogeneration Power-Desalination in Small Modular Reactors (SMRs) for Load Following in Indonesia." *Proceedings of the 4<sup>th</sup> International Conference on Science and Technology (ICST)*, pp. 1-6. IEEE, 2018.
- Huang, Zhiyuan, **Mansur Arief**, Henry Lam, and Ding Zhao. "Synthesis of Different Autonomous Vehicles Test Approaches." *Proceedings of the 21<sup>st</sup> International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2000-2005. IEEE, 2018.
- **Arief, Mansur**, Peter Glynn, and Ding Zhao. "An Accelerated Approach to Safely and Efficiently Test Pre-Production Autonomous Vehicles on Public Streets." *Proceedings of the 21<sup>st</sup> International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2006-2011. IEEE, 2018.

## PRESENTATIONS & TALKS

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| ■ 25 <sup>th</sup> International Conference on Intelligent Transportation Systems (ITSC), Macau, China   | 2022 |
| ■ Stanford Intelligent Systems Laboratory (SISL) Meeting, Virtual  | 2022 |
| ■ 24 <sup>th</sup> International Conference on Artificial Intelligence and Statistics (AISTATS), Virtual | 2021 |
| ■ SIAM Conference on Computational Science and Engineering (CSE21), Virtual                              | 2021 |
| ■ INFORMS Annual Meeting, Virtual  | 2020 |
| ■ 2nd Annual Workshop of Safe AI Lab, Pittsburgh, USA  | 2020 |
| ■ 22 <sup>nd</sup> International Conference on Intelligent Transportation Systems (ITSC), Auckland, NZ   | 2019 |
| ■ Workshop on Rare Events and Driving Scenario Modeling with Uber ATG, Pittsburgh, USA                   | 2019 |
| ■ 21 <sup>st</sup> International Conference on Intelligent Transportation Systems (ITSC), Hawaii, USA    | 2018 |
| ■ Workshop on Safe AI, Pittsburgh, USA   | 2018 |

## ACADEMIC SERVICES

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| ■ <i>Reviewer</i> , Journal of Aerospace Information Systems (AIAA-JAIS)   | 2023 |
| ■ <i>Reviewer</i> , Journal of Artificial Intelligence Research (JAIR)   | 2023 |
| ■ <i>Reviewer</i> , Operations and Supply Chain Management: An International Journal (OSCM)                                  | 2023 |
| ■ <i>Reviewer</i> , 26 <sup>th</sup> International Conference on Intelligent Transportation Systems (ITSC)                   | 2023 |
| ■ <i>Program Committee</i> , 2nd Workshop on Formal Verification of Machine Learning (WFVML)                                 | 2023 |
| ■ <i>Program Committee</i> , Secure and Safe Autonomous Driving (SSAD) Workshop and Challenge                                | 2023 |
| ■ <i>Reviewer</i> , 2023 International Design Engineering Technical Conferences (IDETC) Conference                           | 2023 |
| ■ <i>Review Coordinator</i> , 35 <sup>th</sup> Design Theory and Methodology (DTM) Conference                                | 2023 |
| ■ <i>Program Committee</i> , Trustworthy and Socially Responsible Machine Learning (TSRML) Workshop                          | 2022 |
| ■ <i>Reviewer</i> , 2023 IEEE/RSJ International Conference on Robotics and Automation (ICRA)                                 | 2022 |
| ■ <i>Reviewer</i> , IEEE Transactions on Intelligent Transportation Systems (IEEE T-ITS)                                     | 2022 |
| ■ <i>Reviewer</i> , 16 <sup>th</sup> International Conference on Advanced Engineering Computing and Applications in Sciences | 2022 |
| ■ <i>Reviewer</i> , 25 <sup>th</sup> International Conference on Intelligent Transportation Systems (ITSC)                   | 2022 |
| ■ <i>Reviewer</i> , 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)                          | 2022 |
| ■ <i>Reviewer</i> , 24 <sup>th</sup> International Conference on Intelligent Transportation Systems (ITSC)                   | 2021 |
| ■ <i>Organizer</i> , Security and Safety in Machine Learning Systems, ICLR Workshop  | 2021 |
| ■ <i>Reviewer</i> , 24 <sup>th</sup> International Conference on Artificial Intelligence and Statistics (AISTATS)            | 2021 |
| ■ <i>Reviewer</i> , 22 <sup>nd</sup> International Conference on Intelligent Transportation Systems (ITSC)                   | 2019 |
| ■ <i>Reviewer</i> , 21 <sup>st</sup> International Conference on Intelligent Transportation Systems (ITSC)                   | 2018 |

## **PATENT**

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- Methods and Systems of Generating Images Utilizing Machine Learning and Existing Images with Disentangled Content and Style Encoding (*U.S. Serial No. 17/949,517 filed September 21, 2022*) 2022

## **OTHER SERVICES**

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- *Volunteer*, AFS USA 2022
- *President*, Indonesian Students at CMU (PERMIAS CMU) 2021
- *Vice President*, Indonesian Students at CMU (PERMIAS CMU) 2020
- *Executive Board*, Indonesian Supply Chain and Logistics Institute, National Student Chapter 2018
- *Executive Board*, INFORMS Student Chapter at University of Michigan 2018