

# Mansur Maturidi Arief

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

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## EDUCATION

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

## EMPLOYMENT

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

## TEACHING ASSISTANTSHIP

■ Trustworthy AI Autonomy (24784), CMU	2021
■ Intro to Scientific Computing (24781), CMU	2020
■ Supply Chain Management, IndonesiaX	2016
■ Distribution Management, ITS	2014
■ Industrial Systems Design, ITS	2013

## AWARDS & CREDENTIALS

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

## PUBLICATIONS

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- 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 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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- Reviewer, *Transportation Research Board Annual Meeting (TRBAM)* 2023
- Reviewer, *Annals of Operations Research (ANOR)* 2023
- Reviewer, *IEEE Transactions on Intelligent Vehicles (T-IV)* 2023
- Reviewer, *Journal of Aerospace Information Systems (JAIS)* 2023
- Reviewer, *Journal of Artificial Intelligence Research (JAIR)* 2023
- Reviewer, *Operations and Supply Chain Management: An International Journal (OSCM)* 2023
- Program Committee, *Workshop on Formal Verification of Machine Learning (WFMVLM)* 2023
- Program Committee, *Secure and Safe Autonomous Driving (SSAD) Workshop and Challenge* 2023
- Reviewer, *International Design Engineering Technical Conferences (IDETC) Conference* 2023
- Review Coordinator, *Design Theory and Methodology (DTM) Conference* 2023
- Program Committee, *Trustworthy and Socially Responsible Machine Learning (TSRML) Workshop* 2022
- Reviewer, *IEEE/RSJ International Conference on Robotics and Automation (ICRA)* 2022
- Reviewer, *IEEE Transactions on Intelligent Transportation Systems (T-ITS)* 2022
- Reviewer, *International Conference on Advanced Engineering Computing and Applications in Sciences* 2022
- Reviewer, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2022
- Organizer, *Security and Safety in Machine Learning Systems, ICLR Workshop* 2021
- Reviewer, *International Conference on Artificial Intelligence and Statistics (AISTATS)* 2021
- Reviewer, *International Conference on Intelligent Transportation Systems (ITSC)* 2018–2023
- Technical Committee, *Operations and Supply Chain Management: An International Journal (OSCM)* 2014–2023

## 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, <i>AFS USA</i>	2022–2023
■ President, <i>Indonesian Students at CMU (PERMIAS CMU)</i>	2021
■ Vice President, <i>Indonesian Students at CMU (PERMIAS CMU)</i>	2020
■ Executive Board, <i>Indonesian Supply Chain and Logistics Institute, National Student Chapter</i>	2018
■ Executive Board, <i>INFORMS Student Chapter at University of Michigan</i>	2018
■ Volunteer, <i>AFS Bina Antar Budaya, Indonesia</i>	2008–2014