Mansur Maturidi Arief

Postdoctoral Scholar, Stanford Intelligent Systems Laboratory (SISL)

Department of Aeronautics and Astronautics, Stanford University

Email: mansur.arief@stanford.edu | Web: mansurarief.github.io | Pronouns: he/him/his

EDUCATION

Carnegie Mellon University, Pittsburgh PA, USA — 2018–2023
Ph.D. in Mechanical Engineering (Thesis: Certifiable Evaluation for Safe Intelligent Autonomy)

University of Michigan, Ann Arbor MI, USA — 2016–2018
M.S.E. in Industrial and Operations Engineering

Sepuluh Nopember Institute of Technology (ITS), Surabaya, Indonesia — 2010–2014
B.E. in Industrial and Systems Engineering

EMPLOYMENT

Stanford Intelligent Systems Lab (SISL), Department of Aeronautics & Astronautics, Stanford University — 2023–present
Postdoctoral Researcher, advised by Dr. Mykel Kochenderfer

Robert Bosch LLC (Bosch) — May–August 2021
Machine Learning/Computer Vision Research Intern, supervised by Dr. Ji Eun Kim

University of Michigan Transportation Research Institute (UMTRI) — 2017–2018
Research Assistant, advised by Dr. Ding Zhao

Office of International Affairs, ITS — 2015–2016
Business Assistant, supervised by Dr. Maria Anityasari

Innovation and Business Venture Agency (BIBV), ITS — 2015–2016
Associate Consultant, supervised by Dr. I Ketut Gunarta

Logistics and Supply Chain Management Laboratory (LSCM), ITS — 2012–2016
Research Assistant, supervised by Prof. I Nyoman Pujawan

Center for Transportation Research, ITS — 2012–2014
Research Assistant, supervised by Prof. Iwan Vanany

TEACHING EXPERIENCE

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

AWARDS & CREDENTIALS

- 2024 Research Grant (on Intelligent Systems for Integrated Stroke Diagnosis and Treatment under Uncertainty), *I-4* — 2024
- Deep Learning Specialization, *DeepLearning.ai* — 2021
- Best Poster, *Michigan Student Symposium on Interdisciplinary Statistical Sciences (MSSISS)* — 2018
- Best Paper, Power and Energy Symposium, *International Conference on Science and Technology (ICST)* — 2018
- MicroMasters in Supply Chain Management, *MITx on edX* — 2018
- LPDP Scholarship Awardee, *Indonesian Endowment Fund for Education* — 2016

■ 1st Place, *National Industrial Engineering Challenge, University of Andalas* 2014

PUBLICATIONS

■ Khatim, Nur Ahmad, Azmul Asmar Irfan, Amaliya Mata'ul Hayah, **Mansur Arief**. "Toward an Integrated Decision-Making Framework for Optimized Stroke Diagnosis with DSA and Treatment under Uncertainty." To appear in the *Proceedings of the 2024 6th International Conference on Intelligent Medicine and Image Processing (IMIP)*. IEEE, 2024.

■ 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 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 25th 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 25th 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 25th 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 22nd 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 22nd 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 4th 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 21st 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 21st International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2006-2011. IEEE, 2018.

PRESENTATIONS & TALKS

SIAM Conference on Uncertainty Quantification (UQ) 2024, Trieste, Italy	2024*
Invited Public Guest Lecture, Interdisciplinary School of Management Technology, ITS Surabaya, Virtual	2023
American Geophysical Union (AGU) 2023, San Francisco, USA	2023
Invited Guest Lecture, Industrial and Systems Engineering, ITS Surabaya, Virtual	2023
Invited Speaker, Biweekly Meetings, IndoSTEELERS, Virtual	2023
Invited Speaker, Teach Talk 41, Indonesian Lecturer Association - Indonesian Diaspora Network United, Virtual	2023
Invited Speaker, International Webinar of Business and Industrial Application Division, BRAIN IPB, Virtual	2023
25th International Conference on Intelligent Transportation Systems (ITSC), Macau, China	2022
Stanford Intelligent Systems Laboratory (SISL) Meeting, Virtual	2022
24th 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, Carnegie Mellon University, Pittsburgh, USA	2020
22nd International Conference on Intelligent Transportation Systems (ITSC), Auckland, NZ	2019
Workshop on Rare Events and Driving Scenario Modeling with Uber ATG, Pittsburgh, USA	2019
21st International Conference on Intelligent Transportation Systems (ITSC), Hawaii, USA	2018
Workshop on Safe AI, Carnegie Mellon University, Pittsburgh, USA	2018

upcoming

ACADEMIC SERVICES

Program Committee, *Simulation and Modeling Methodologies, Technologies and Applications (SIMULTECH)*	2024
Program Committee, *International Conference on Intelligent Medicine and Image Processing (IMIP)*	2024
Reviewer, *Robotics and Automation Letter (RAL)*	2023
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

- Reviewer, *Heliyon* — 2023
- Program Committee, *Workshop on Formal Verification of Machine Learning (WFVML)* — 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 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, *IEEE/RSJ International Conference on Robotics and Automation (ICRA)* — 2019–2023
- Reviewer, *International Conference on Intelligent Transportation Systems (ITSC)* — 2018–2023
- Technical Committee, *Operations and Supply Chain Management: An International Journal (OSCM)* — 2014–2024

PATENT

- 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

- International Taskforce, *National Postdoctoral Association (NPA)* — 2023
- Organizer, *Indonesian Scholars Thriving in Excellence in Education, Learning, and Research (IndoSTEELERS)* — 2023
- Volunteer, *AFS USA* — 2022–2023
- 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* — 2017
- Executive Board, *INFORMS Student Chapter at University of Michigan* — 2017
- Volunteer, *AFS Bina Antar Budaya, Indonesia* — 2008–2014