

Mansur Maturidi Arief

Ph.D. Student, CMU Safe AI Lab

Mechanical Engineering Department, Carnegie Mellon University

5000 Forbes Avenue, Pittsburgh, PA 15213, USA

Email: marief@cmu.edu | Web: mansurarief.github.io | Pronouns: [he/him/his](#)

RESEARCH INTERESTS

Autonomous vehicles, intelligent transportations, machine learning, modeling and optimization, rare-event simulation

EDUCATION

Carnegie Mellon University, Pittsburgh PA, USA 2018–present

Ph.D. in Mechanical Engineering

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 & INTERNSHIPS

CR/RSI1-NA, Robert Bosch LLC (Bosch) 2021

Machine Learning Research Intern, supervised by Dr. Ji Eun Kim

Transportation Research Institute, University of Michigan 2017–2018

Research Assistant, supervised by Dr. Ding Zhao

Innovation and Business Venture Agency, ITS 2015–2016

Associate Consultant, supervised by Dr. I Ketut Gunarta

Logistics and Supply Chain Management Laboratory, 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

Land Transport Division, Kamadjaja Logistics 2013

Simulations Intern, supervised by Dr. Dody Hartanto

AWARDS & CREDENTIALS

- *Deep Learning Specialization*, DeepLearning.ai 2021
- *Best Poster*, Michigan Student Symposium on Interdisciplinary Statistical Sciences (MSSISS), Univ. of Michigan 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 Awardee*, PK-67, Indonesian Endowment Fund for Education 2016
- *1st Place*, National Industrial Engineering Challenge, University of Andalas 2014
- *2nd Place*, National Industrial Engineering Challenge on Small and Medium Enterprises, University of Brawijaya 2014
- *5th Place*, National Industrial Engineering Challenge, University of Indonesia 2013
- *Program Beasiswa Santri Berprestasi (PBSB) Fellowship*, Indonesian Ministry of Religious Affairs 2010
- *AFS-USA Kennedy-Lugar Youth Exchange Studies (YES) Awardee*, U.S. Department of State 2008

TEACHING EXPERIENCE

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

PUBLICATIONS

- Arief, Mansur M., 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 M. Arief, Haohong Lin, Bo Li, Ding Zhao. "A Survey on Safety-Critical Driving Scenario Generation – A Methodological Perspective." *Under review*.
- Arief, Mansur M., 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*.
- Arief, Hasan A., Peter J. Thomas, Muhammad Ali Fauzi, Mansur M. Arief, Christian Brekken, Ivar Eskerud Smith, Magnus Hjelstuen, Inge Klepsvik, Bian Yang, Tomasz Wiktorski, and Aggelos K. Katsaggelos. "Self-Supervised Transformer for Better Modeling of Distributed Acoustic Sensor Data." *Under review*.
- Abdussyukur, Hafizh, Mahmud Dwi Sulistiyo, Ema Rachmawati, Mansur M. Arief. "Semantic Segmentation for Identifying Road Surface Damages Using Lightweight Encoder-Decoder Network." *Under review*.
- Arief, Mansur M., 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 M. 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 M. 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 M., 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 M. 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 M. 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 22nd International Conference on Intelligent Transportation System (ITSC)*. IEEE, 2019.
- Guo, Yaohui, Vinay Varma Kalidindi, Mansur M. 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 M. 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 M. 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 M. 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 M. 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 M. 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 M.**, 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.
- Pujawan, Nyoman, **Mansur M. Arief**, Benny Tjahjono, and Duangpun Kritchanhai. "An integrated shipment planning and storage capacity decision under uncertainty: A simulation study." *International Journal of Physical Distribution & Logistics Management* 45, no. 9/10 (2015): 913-937.

PRESENTATIONS & TALKS

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|---|------|
| ■ 25 th International Conference on Intelligent Transportation Systems (ITSC), Macau, China | 2022 |
| ■ CMU Safe AI Lab Meeting, Virtual | 2022 |
| ■ Stanford Intelligent Systems Laboratory (SISL) Lab Meeting, Virtual | 2022 |
| ■ 24 th 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 nd 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 st International Conference on Intelligent Transportation Systems (ITSC), Hawaii, USA | 2018 |
| ■ Workshop on Safe AI, Pittsburgh, USA | 2018 |
| ■ 8 th International Conference on Industrial Engineering and Operations Management (IEOM), Bandung, IDN | 2018 |

ACADEMIC SERVICES

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| ■ <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 th International Conference on Advanced Engineering Computing and Applications in Sciences | 2022 |
| ■ <i>Reviewer</i> , 25 th 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 th 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 th International Conference on Artificial Intelligence and Statistics (AISTATS)	2021
■ <i>Reviewer</i> , 22 nd International Conference on Intelligent Transportation Systems (ITSC)	2019
■ <i>Reviewer</i> , 21 st International Conference on Intelligent Transportation Systems (ITSC)	2018
■ <i>Organizer</i> , 6 th International Conference on Operations and Supply Chain Management (OSCM)	2014
■ <i>Research Assistant Coordinator</i> , Logistics and Supply Chain Management (LSCM) Laboratory, ITS	2013
■ <i>Research and Teaching Assistant</i> , Logistics and Supply Chain Management (LSCM) Laboratory, ITS	2012

OTHER SERVICES

■ <i>Volunteer</i> , AFS USA	2022
■ <i>President</i> , Indonesian Students at CMU (PERMIAS CMU)	2021
■ <i>Vice President</i> , Indonesian Students at CMU (PERMIAS CMU)	2020
■ <i>Executive Board</i> , Indonesian Supply Chain and Logistics Institute, National Student Chapter	2018
■ <i>Executive Board</i> , INFORMS Student Chapter at University of Michigan	2017
■ <i>Executive Board</i> , Indonesian Student Association at University of Michigan (PERMIAS Michigan)	2017
■ <i>President</i> , Community of Santri Scholars of Ministry of Religious Affairs (CSSMoRA) at ITS	2012
■ <i>Volunteer</i> , AFS Bina Antar Budaya, Makassar Chapter	2009