

# Tung-Cheng Wu

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## EXPERIENCE

- **DENSO International America, Inc.** [🌐] Nov 2024 - Present  
Pittsburgh, PA, USA  
*Research Engineer*
  - Develop motion planning algorithm for autonomous driving system
- **Carnegie Mellon University** [🌐] Nov 2024 - Present  
Pittsburgh, PA, USA  
*Visiting Researcher*
  - **Research Topic:** Autonomous driving and uncertainty quantification
- **DENSO Corporation** [🌐] Apr 2020 - Nov 2024  
Tokyo, Japan  
*Research Engineer*
  - Develop a DNN-based algorithm for advanced driver assistance systems. This technology can forecast the lane-changing and cut-in intentions of surrounding vehicles early. It has already passed proof-of-concept (PoC) and been transferred to the product team.
- **Industrial Technology Research Institute** [🌐] Jul 2018 - Sep 2018  
Hsinchu, Taiwan  
*Intern*
  - Develop a DQN-based navigation algorithm for quadcopter

## EDUCATION

- **National Cheng Kung University** Sep 2017 - Jun 2019  
Tainan, Taiwan  
*Master of Science in Engineering Science, GPA: 4.1 / 4.3 (best 0.7%)*
  - **Thesis topic:** Design new updating strategy to improve deep reinforcement learning
  - **Major:** Path planning under uncertain situation
- **National Cheng Kung University** Sep 2013 - Jun 2017  
Tainan, Taiwan  
*Bachelor of Science in Psychology, GPA: 3.76 / 4.0*
  - **Major:** Computational Cognitive Neuroscience, Statistical learning theory

## PUBLICATIONS

C=CONFERENCE, J=JOURNAL, S=IN SUBMISSION, T=THESIS


- [C.1] **Tung-Cheng Wu**, Jon-Fan Hu, Shu-Ling Peng. (2017). **Influences of the Matching Effects of Cognitive and Emotional Factors on Attitude Change**, In *Proceedings of the Annual Meeting of the Cognitive Science Society*, Vol. 39, Cognitive Science Society
- [C.2] **Tung-Cheng Wu**, Shau-Yin Tseng, Chin Feng Lai, Chia Yu Ho, Ying Hsun Lai. (2018). **Navigating Assistance System for Quadcopter with Deep Reinforcement Learning**. In *1st International Cognitive Cities Conference (IC3)*, pp. 16-19. IEEE.
- [T.1] **Tung-Cheng Wu**. (2019). **Moderating Maximal Value - a Practical Expectation-Based Method for Value Function Approximation in Reinforcement Learning**.
- [J.1] Ying-Hsun Lai, **Tung-Cheng Wu**, Chin-Feng Lai, Laurence Tianruo Yang, Xiaokang Zhou. (2020). **Cognitive optimal-setting control of AIoT industrial applications with deep reinforcement learning**. *IEEE Transactions on Industrial Informatics*, vol.17(3), pp.2116-2123, IEEE
- [S.1] **Tung-Cheng Wu**, Alexandre Capone, Jeff Schneider. (2025). **Traffic Density and Episode Length-Based Curriculum Learning for Realistic Driving Simulators**. Under review.
- [S.2] Eric Shau, Udit Arora, Ayush Tarachandani, **Tung-Cheng Wu**, Mineui Hong, Alexandre Capone, Jeff Schneider. (2025). **Learning to Drive from Failures: LLM-guided Reward Shaping for Autonomous Driving**. Under review.

## SKILLS

- **Programming Languages:** Python, Matlab, ROS, C++, R
- **Data Science & Machine Learning Toolkit:** PyTorch, TensorFlow, Keras, sk-learn
- **Other Tools & Technologies:** LaTeX, git
- **Research Skills:** Calibration, Data collection

## HONORS AND AWARDS

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- **Excellent Master Thesis** Dec 2019  
*Institute of Information & Computing Machinery*  
◦ Excellent paper of CS theses in the same year from entire country 
- **Excellent Paper Award** Sep 2018  
*International Cognitive Cities Conference*  
◦ 1 of 4 excellent papers from entire conference papers
- **Scholar Award** Jul 2018  
*Department of Engineering Science*  
◦ awarded to 5% best students across entire department, Aachen, 2016

## ADDITIONAL INFORMATION

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- **Languages:** Chinese (native), English (fluent), Japanese (intermediate)
- **Interests:** swimming, hiking, real-time strategy (RTS) game

## REFERENCES

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1. **Jon-Fan Hu**  
Associate Professor, Psychology  
National Cheng Kung University  
Email: jfhu@mail.ncku.edu.tw  
*Relationship: Advisor in BS*
2. **Chin-Feng Lai**  
Professor, Engineering Science  
National Cheng Kung University  
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*Relationship: Advisor in MS*
3. **Yuki Asada**  
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*Relationship: Manager*
4. **Shinya Tanaka**  
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*Relationship: Manager*