# Fumihito FURUHASHI

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September 22, 2024

## Education

**Ph.D. in Civil Eng., The University of Tokyo** Oct. 2025 - Oct. 2028 (Expected)
*Advisor: Eiji Hato*

**M.Eng. in Civil Eng., The University of Tokyo** Apr. 2024 - Sep. 2025
*Best Master's Thesis, Dept. of Civil Eng.,*
*Early Completion, Advisor: Eiji Hato*

**B.Eng. in Civil Eng., The University of Tokyo** Apr. 2020 - Mar. 2024
*Advisor: Kazuki Shibanuma*

## Research Interest

Micro Traffic flow, Autonomous Vehicle, Car-Following, E2E model, etc.

## Fellowship and Grants

**Fostering Advanced Human Resources to Lead Green Transformation (SPRING GX)** 2025 - 2028

- *Stipend*: 180,000 JPY/month for 3 years in Japan
- *Funding*: 360,000 JPY/year for 3 years in Japan

**World-leading Innovative Graduate Study Program (WINGS)** 2024 - 2029

- *Stipend*: 180,000 JPY/month for 3 years in Japan

## Honors and Awards

**Furuishi Award (Outstanding Master thesis Award)** 2025
The Dept. of Civil Eng.

**Graduation Representative (Master's Program)** 2025
The Dept. of Civil Eng.

## Teaching Assistant Experience

Teaching Assistant, Applied Project (Undergraduate) 2024 Autumn
*Instructor: Prof. Eiji Hato, The University of Tokyo.*

## Publications

**Domestic Conference Proceedings**

(1) **Furuhashi, F.**, et al. (2023). *Development of application phase analysis method based on S-version of finite element method for high-speed crack propagation and arrest phenomena in 3D plate structures.* The Japan Society of Mechanical Engineers, Ibaraki. **(Peer-reviewed)**

(2) He, T., **Furuhashi, F.**, et al. (2024). *S-version FEM-based strategy for predicting high-speed crack propagation/arrest behavior in 3D cross-joint structures.* The Japan Society for Computational Engineering and Science, Hyogo.

(3) **Furuhashi, F.**, et al. (2024). *Validation of a car following model within vehicle platoons on highways using OBD data.* Japan Society of Traffic Engineers, Tokyo. **(Peer-reviewed)**

(4) **Furuhashi, F.** (2024). *Classification of platoon states based on micro traffic flow simulation using 2D differential games.* Committee of Infrastructure Planning and Management, Okayama.

(5) **Furuhashi, F.** and Hato, E. (2025). *High-Precision Image Driven Car-Following Model*, Japan Society of Traffic Engineers. **(Peer-reviewed)**

(6) **Furuhashi, F.** and Hato, E. (2025). *Stability Analysis of a Vision Transformer–Based Image-Driven Following Model*. Committee of Infrastructure Planning and Management, Fukui.

**International Conference Proceedings**

(1) He, T., **Furuhashi, F.**, et al. (2024). *S-version FEM-based strategy for predicting high-speed crack propagation/arrest behavior in 3D structures.* European Conference on Fracture 2024, Zagreb, Croatia. **(Peer-reviewed)**

(2) **Furuhashi, F.** (2024). *Validation of an innovative car-following model using GNNs and PINNs with multi-modal AI on on-board diagnostics.* The 28th International Conference of Hong Kong Society for Transportation Studies, Hong Kong, **(Peer-reviewed)**

(3) **Furuhashi, F.** (2025) *DG-PINN: Differential Game based Physics-Informed Neural Network for Vehicle Trajectory Prediction,* 2025 IEEE 28th International Conference on Intelligent Transportation Systems (ITSC 2025), Australia. **(Peer-reviewed, Accepted)**

(4) **Furuhashi, F.** and Hato, E. (2025). *Physically Consistent Differential-Game Surrogates for Interaction-Aware AV Trajectory Planning*, The 29th International Conference of Hong Kong Society for Transportation Studies., Hong Kong **(Peer-reviewed, Accepted)**

(5) **Furuhashi, F.** and Hato, E. (2025). *A Map-less Image-Based Car-Following with String Stability Analysis Using CVAE,* The 105th Transportation Research Board (TRB) Annual Meeting 2026, United States. **(Peer-reviewed, Under Review)**

## Presentations

(1) **Furuhashi, F.**, et al. (2024). *Validation of a car following model within vehicle platoons on highways using OBD data.* Journal of Traffic Engineering. **(Peer-reviewed)**

## Internships

Luup Inc. (Data Scientist) May. 2022 - Apr. 2024
M3 Inc. (Data Scientist) Sep. 2023

## Activities

The University of Tokyo Badminton team: Apr. 2020 - Sep. 2023
*I served as the team captain.*

## Other Skills and Biography

**Language**: Japanese(native), English(fluent), Chinese(introductory)
**Programming Language**: Python (Advanced), C++ (Advanced), Fortran (Advanced), Mathematica (Advanced), JavaScript (Advanced), MATLAB (Advanced), Java (Intermediate), Go (Beginner), Rust (Beginner)
**Computer Skills**: Git/GitHub, Docker, Linux, Supercomputer (MPI, CUDA), Google Cloud
**Nationality**: Japan
**Gender**: Male