The Joint International Conference of the 5th

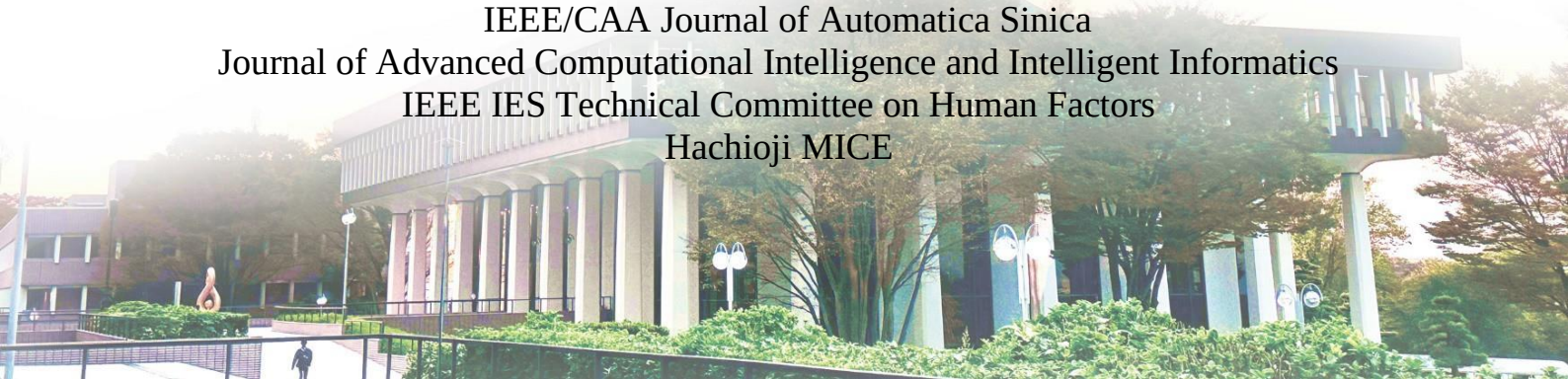
AGILEHAND Plenary Meeting & 2024 IEEE/CAA

Journal of Automatica Sinica Conference

Hachioji, Tokyo, Japan

2-6, December, 2024

Tokyo University of Technology
AgileHand Project
IEEE/CAA Journal of Automatica Sinica
Journal of Advanced Computational Intelligence and Intelligent Informatics
IEEE IES Technical Committee on Human Factors
Hachioji MICE



APM&JAS 2024 Program

December 2 Monday: Registration (for local people)
14:00 ~ 17:00: Registration (for local people)
Venue: Room C104, Research Building C, Hachioji Campus, TUT

December 3 Tuesday: Registration (for AGILEHAND members), Agilenhand plenary meetings, welcome reception
9:00 ~ 12:00: Registration (for AGILEHAND members)
Venue: LEB hall, Hachioji Campus, TUT
Lunch: Canteen D, Hachioji Campus, TUT
14:00 ~ 17:00: Agilenhand plenary meetings
Venue: LEB 207, Hachioji Campus, TUT
18:00 ~ 20:00: Welcome reception
Venue: Hachioji Izakaya

December 4 Wednesday: Agilenhand plenary meetings and APM&JAS
9:00 ~ 12:00: Agilenhand plenary
Venue: LB D 301, Hachioji Campus, TUT
Lunch: Canteen D, Hachioji Campus, TUT
Group Photo: Hachioji Campus, TUT

13:00 ~ 17:30: APM&JAS
Venue: LEB 402 and 403, Hachioji Campus, TUT
18:00 ~ 20:00: Gala dinner
Venue: Nihonkaku

December 5 Thursday: Technique visit and culture visit
9:00 ~ 11:30: Technique visit
Venue: Hachioji Campus, TUT
Lunch: Canteen D, Hachioji Campus, TUT
13:00 ~ 14:00: Technique visit
Venue: 1st floor, Main Administration Building, Hachioji Campus, TUT
14:00 ~ 16:30: Culture visit
Venue: Mt. Takao
17:00 ~ 19:00: Dinner
Venue: Ukai Toriyama, Takao

December 6 Friday: Industrial visiting (Assemble at the hotel entrance)
9:00 ~ 12:00: Industrial visiting
Venue: Shimada Electric Manufacturing Company

（LEB: Learning and Experiment Building, 講義実験棟　　LB: Learning Building, 講義棟）

Free Wifi for the conference:
SSID (for 5 GHz standard): TEUES24-5G　　SSID (for 2.4 GHz standard): TEUES24-24G
Key (for both 5 GHz and 2.4 GHz): Guest&N29T

Plenary Lecture

Plenary Lecturer:

Distinguished Professor Qing-Long Han
Member of the Academia Europaea (The Academy of Europe)
IEEE Fellow, IFAC Fellow, Honorary IEAust Fellow, CAA Fellow
Pro Vice-Chancellor (Research Quality), Swinburne University of Technology, Australia

Title: Dynamic Event-Triggered Distributed Coordination Control

Abstract: Distributed coordination control is the current trend in networked systems and finds prosperous applications across a variety of fields, such as smart grids and intelligent transportation systems. One fundamental issue in coordinating and controlling a large group of distributed and networked agents is the influence of intermittent inter-agent interactions caused by constrained communication resources. Event-triggered communication scheduling stands out as a promising enabler to strike a balance between the desired control performance and the satisfactory resource efficiency. What distinguishes dynamic event-triggered scheduling from traditional static event-triggered scheduling is that the triggering mechanism can be dynamically adjusted over time in accordance with both available system information and additional dynamic variables. This talk provides an up-to-date overview of dynamic event-triggered distributed coordination control. The motivation of dynamic event-triggered scheduling is first introduced in the context of distributed coordination control. Then some techniques of dynamic event-triggered distributed coordination control are discussed in detail. Implementation and design issues are well addressed. Furthermore, this talk exemplifies two applications of dynamic event-triggered distributed coordination control in the fields of microgrids and automated vehicles. Several challenges are suggested to direct future research.

Professor Han is Pro Vice-Chancellor (Research Quality) and a Distinguished Professor at Swinburne University of Technology, Melbourne, Australia. He held various academic and management positions at Griffith University and Central Queensland University, Australia. He received the Ph.D. degree in Control Engineering from East China University of Science and Technology in 1997.

Professor Han was awarded the 2024 IEEE Dr.-Ing. Eugene Mittelmann Achievement Award (the Highest Award in Industrial Electronics), the 2021 Norbert Wiener Award (the Highest Award in systems science and engineering, and cybernetics), the 2021 M. A. Sargent Medal (the Highest Award of the Electrical College Board of Engineers Australia), the IEEE Systems, Man, and Cybernetics Society Andrew P. Sage Best Transactions Paper Award in 2022, 2020, and 2019, respectively, the IEEE/CAA Journal of Automatica Sinica Norbert Wiener Review Award in 2021, and the IEEE Transactions on Industrial Informatics Outstanding Paper Award in 2020.

Professor Han is a Member of the Academia Europaea (The Academy of Europe) (MAE). He is a Fellow of The Institute of Electrical and Electronics Engineers (FIEEE), a Fellow of The International Federation of Automatic Control (FIFAC), an Honorary Fellow of The Institution of Engineers Australia (HonFIEAust), and a Fellow of The Chinese Association of Automation (FCAA). He is a Highly Cited Researcher in both Engineering and Computer Science (Clarivate). He has served as an AdCom Member of IEEE Industrial Electronics Society (IES), a Member of IEEE IES Fellows Committee, a Member of IEEE IES Publications Committee, Chair of IEEE IES Technical Committee on Networked Control Systems, and the Co-Editor-in-Chief of IEEE Transactions on Industrial Informatics. He is currently the Editor-in-Chief of IEEE/CAA Journal of Automatica Sinica and the Co-Editor of Australian Journal of Electrical and Electronic Engineering.

APM&JAS 2024 Program (4 December, Wednesday)

13:00 ~ 13:45 Plenary Lecture (Room: LEB 402)
Title: Dynamic Event-Triggered Distributed Coordination Control
Keynote Speaker: Qing-Long Han Chairperson: Ciarapica Filippo Emanuele

14:00 ~ 17:20 Parallel Technical Section 1 (Room: LEB 402)
Chair: xxxxxx Co-Chair: xxxxx

14:00 ~ 14:20
High Precision Tracking Control for Rotational Systems by Spatial Equivalent-Input-Disturbance Repetitive Control
Yujian Zhou, Jinhua She

14:20 ~ 14:40
A Koopman-based Equivalent-Input-Disturbance Tremor-Suppressing Strategy
Mingyuan Xie, Jinhua She, Zhen-Tao Liu, Daiki Sato, Seiichi Kawata

14:40 ~ 15:00
Peak Factor Method for Predicting Maximum Response and Control Force on Across-Wind Direction for Active Structural Control
Yinli Chen, Ryuki Kamano, Daiki Sato, Kou Miyamoto

15:00 ~ 15:20
Equivalent Passive Model for Gain-Scheduling Control of Active Base-isolated Structures with Nonlinear Viscous Dampers
Yunhao Zhang, Daiki Sato, Yinli Chen, Jinhua She, Kou Miyamoto

15:20 ~ 15:40
Effect of Noise in Wind Force Estimation Using Equivalent-Input-Disturbance Method for Nonlinear Systems
Razelle Dennise A. Soriano, Daiki Sato, Chen Yinli, Kou Miyamoto

15:40 ~ 15:55
Coffee break

Chair: xxxxxx Co-Chair: xxxxx

15:55 ~ 16:15
An Algebraic Property of a Stochastic Riccati Equation for a Class of Stochastic LQ Optimal Control
Kento Fujita, Daisuke Tsubakino, Shinji Hara

16:15 ~ 16:35
Hierarchical LQ Optimal Control for LTI Systems with Low-rank Physical Interconnection
Daisuke Tsubakino, Shinji Hara

16:35 ~ 16:55
Digital Twin-Driven Demand Forecasting for Soft and Deformable Food Products
Laura Lucantoni, Stefano Croci, Giovanni Mazzuto, Severino Perenzoni, Filippo Emanuele Ciarapica, Maurizio Bevilacqua

16:55 ~ 17:15
Transforming Workforce Skills, Health, and Safety through Digitalization in Soft Product Manufacturing
Hezam Haidar, Paula Pereira, Margarida Tomás, Filippo Emanuele Ciarapica, Dalila Antunes

17:15 ~ 17:30 Closing Ceremony (Room: LEB 402)

14:00 ~ 17:20 Parallel Technical Section 2 (Room: LEB 403)

Chair: xxxxxx Co-Chair: xxxxx

14:00 ~ 14:20

A Robotic Vision System for Automatic Fish Quality Grading and Packaging

Mohamed L. Mekhalf, Saigopal Vasudevan, Jorge S. Calado, Dong Le Anh, Pablo Malvido Fresnillo, Jose Ferreira, Pedro Garcia, Paul Ian Chippendale, Ricardo J. Gonc¸alves, Jose L. M. Lastra, Fabio Poiesi

14:20 ~ 14:40

Exploring Dataset Generation Methods for Instance Segmentation: Application for Stacked Meat Products

Hoang Pham, Dong Le, Pablo Malvido Fresnillo, Saigopal Vasudevan, Jose L. Martinez Lastra

14:40 ~ 15:00

Enhancing Human-Robot Collaboration through Task Estimation Using Spatial Memory

Kota Tahara, Yuya Sugimoto, Mihoko Niitsuma

15:00 ~ 15:20

Proposal of Mobile Robot-Restrained UAV Trainer

Daichi Arai, Edwardo F. Fukushima

15:20 ~ 15:40

A Comprehensive Overview of AGILEHAND Architecture and Integration

Mansoor Ahmed, Ruben Costa, Rui Branco, Jorge Calado, José Ferreira, Filippo Ciarapica, Franciso Fraile, Mohamed Mekhalfi

15:40 ~ 15:55

Coffee break

Chair: xxxxxx Co-Chair: xxxxx

15:55 ~ 16:15

Development of Cable Laying Robot based on Reconfigurable Single Actuator Wave Mechanism

Yuki Sadasue, Fuga Inagaki, Masami Iwase

16:15 ~ 16:35

Development of a Nonverbal Information Analysis System based on Wearable Device

Jiaren Hu, Jinseok Woo

16:35 ~ 16:55

Posture Estimation and Obstacle Detection by Embedding Distance-Measuring Sensors in a Spherical Mobile Robot

Ryota Nakagawa, Yuki Ueno

16:55 ~ 17:15

Interior Acoustic Control System Using Boundary Vibration with Giant Magnetostrictive Actuator: Experimental Consideration on Installation Point of Actuator for Improvement of Noise Reduction

Wu Wenbao, Yudai Tanaka, Kentaro Sawada, Taro Kato, Ikkei Kobayashi, Jumpei Kuroda, Daigo Uchino, Kazuki Ogawa, Keigo Ikeda, Ayato Endo, Takayoshi Narita, Hideaki Kato

17:15 ~ 17:30 Closing Ceremony (Room: LEB 402)

APM&JAS 2024 Program (5 December, Thursday)

9:00 ~ 10:30: Laboratory Visit **(**Assemble at the entrance of Research Building C**)**
Venue: Labs: C106, C107, and C203, Research Building C, Hachioji Campus, TUT

Lab C106: Light&Energy (Ohkubo)

Lab C107: Land and sea mobile robotics (Fukushima)

Lab C203: Human centric mobility (Woo)

10:30 ~ 11:30: Digital twin center
Venue: 1st floor, Main Administration Building, Hachioji Campus, TUT

11:30 ~ 12:30: Lunch (Canteen, Hachioji Campus, TUT)

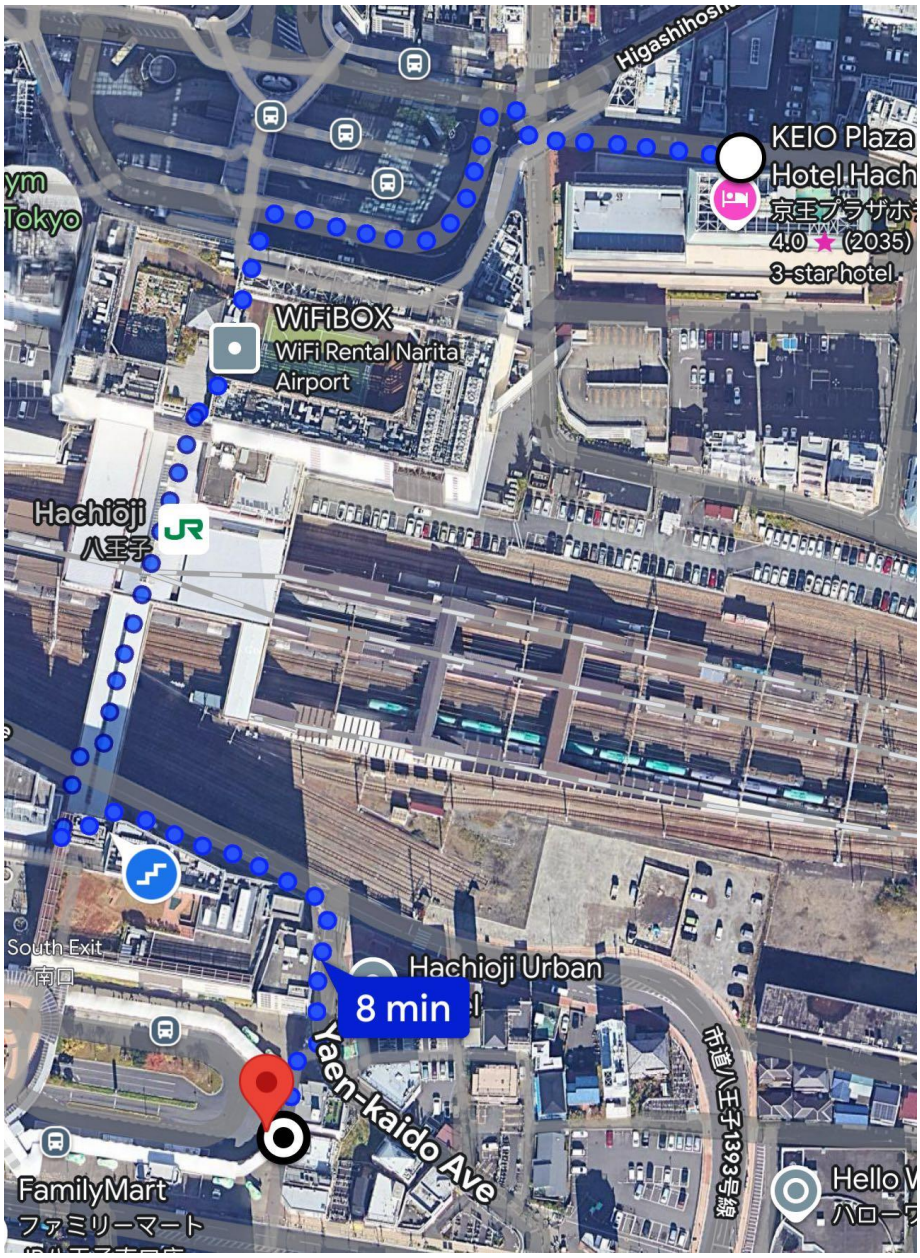
12:30 ~ 13:30: Campus Visit

13:30 ~ 16:00: Mt. Takao

17:00 ~ 19:00: Dinner (Ukai Toriyama, Takao)

Map

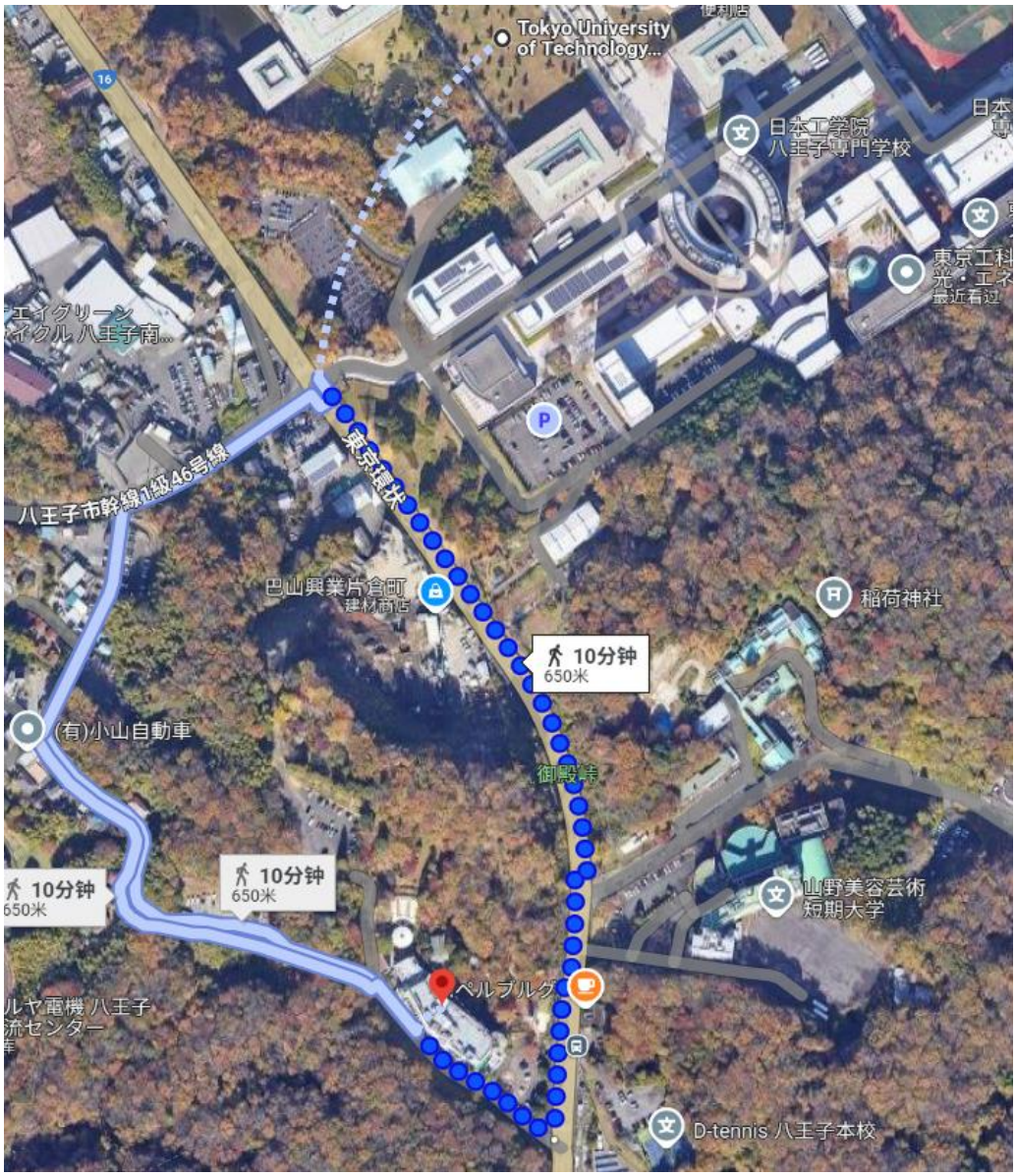
(From the hotel to the school bus stop)



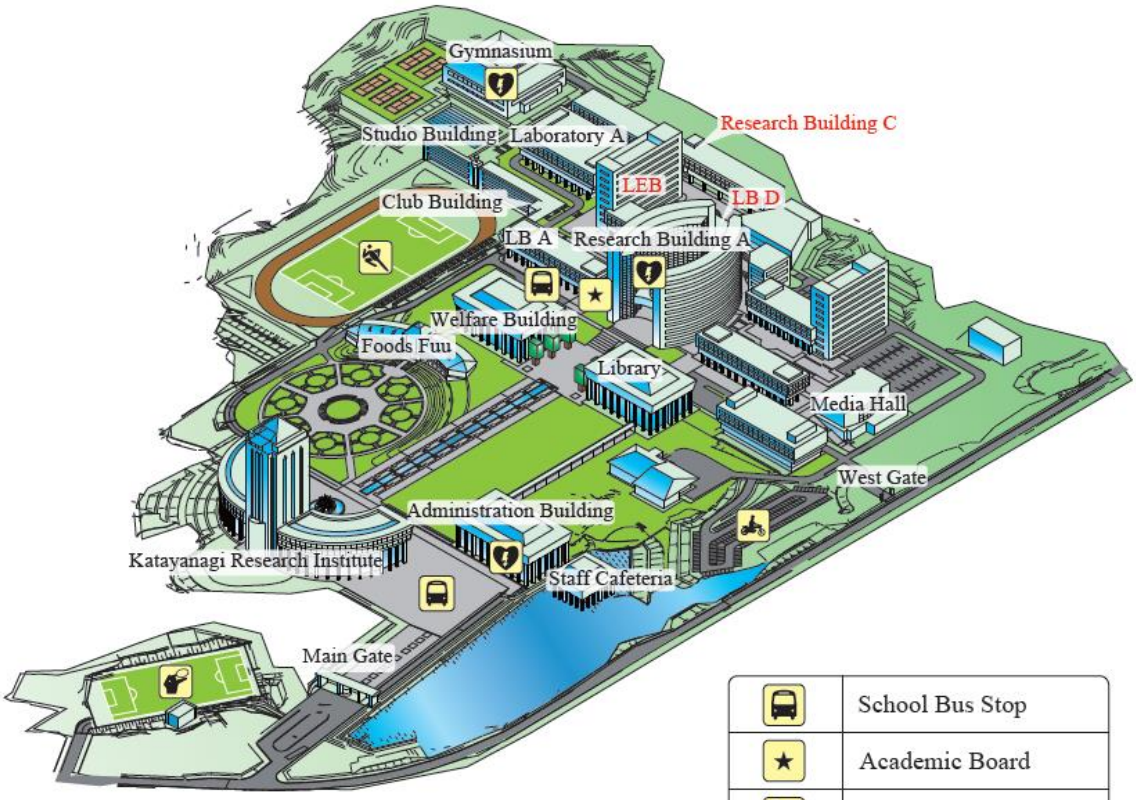
School bus schedule:
https://www.teu.ac.jp/campus/access/2024_0408bus.html#schedule02

Map

(From Tokyo University of Technology to Nihonkaku)



School Map



	School Bus Stop
★	Academic Board
	Sports Ground
	Multi-use Ground
	Parking Area
	AED (Automated External Defibrillator)