

**Research Theme:** Advances in AI-Driven Electronics: Applications of Fuzzy Logic and Machine Learning in Control, Signal Processing, and Autonomous Systems

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**Objective:** The rapid advancements in Artificial Intelligence (AI) and Machine Learning (ML) are transforming modern electronic systems, making them more autonomous, adaptive, and efficient. Integrating technologies like fuzzy logic and ML is critical for improving control systems, signal processing, and autonomous decision-making. These advancements optimize electronic performance, enhance system efficiency, and reduce human intervention.

**Overview:** This theme explores the application of AI, particularly fuzzy logic and ML, within electronics. The aim is to advance research in control engineering, signal processing, and autonomous systems, focusing on improving electronic system performance. It also seeks to develop intelligent systems and optimization algorithms for industrial and consumer applications.

**Eligibility Criteria:**

- International students with a strong interest in AI, ML, fuzzy logic, signal processing, or autonomous systems.
- Candidates who are highly motivated to conduct innovative research in electronics and AI.
- Applicants eager to collaborate on challenging research topics with their academic supervisor.

**Key Research Areas** (open to discussion):

- AI and ML for optimizing control systems
- Signal processing using AI and fuzzy logic
- Autonomous electronic systems and robotics
- Intelligent circuit design and optimization
- Real-time decision-making in embedded systems
- AI-driven industrial electronics
- AI applications in autonomous vehicles and mobility systems
- Fuzzy logic for electronic materials and devices
- AI-enhanced systems in bioelectronics and healthcare
- Advanced AI algorithms for flexible electronics and IoT systems

For more details, please visit:

<http://www.ele.kochi-tech.ac.jp/hoshino/>