AY2026 Plans of Creative Factory Seminar
2026年度創造工房セミナーについて

Code	Theme	Instructors (main instructor)
CFS01	Human Activity Analysis and Recognition using Machine Learning Techniques	SHIN, J.
CFS02	Exploring the Development of a Copy Robot コピーロボット開発に関する研究	JING, L.
CFS03	Performance Improvement of an Application Using an FPGA Board	SAITO, H., KOHIRA, Y., TOMIOKA, Y.

セミナーの成果を発表する「ポスターセッション（9月18日（金）開催予定）」への参加が必須です。

成績はポスターセッション終了後に決定されます（確定は10月）。

Students are required to participate in Poster Session scheduled on September 18 (Fri).

Grades will be determined after the Poster Session in October.

CFS01	**Human Activity Analysis and Recognition using Machine Learning Techniques**
Instructors	SHIN, J.
Course Schedule	June 10 – September 12 * Product creation: June 10 – September 12
Abstract	In recent years, human activity analysis and recognition based on video analysis or sensor data analysis has attracted considerable attention in research and industrial community. This course aims the human activity analysis and recognition using machine learning techniques. The applications of human activity analysis and recognition are spreading in various fields, such as detecting suspicious behavior in public areas, healthcare, elderly people monitoring, fitness tracking, working activity monitoring, human computer interaction, intelligent video surveillance, human-robot interaction, human disorder identification and so on. The purpose of this course is to study feature extraction, selection and machine learning algorithms and use those algorithms to develop human activity analysis and recognition system. In the case of applications, we will mainly focus on human neurological disorder identification and gesture recognition. The basic procedure of a system is as following: 1. Human activity data collection (video based or sensor based) 2. Feature extraction and selection 4. Build the classification or matching or clustering or regression model 5. Take the unknown person data 6. Test and evaluate the model Through this course, we can learn the fundamental knowledge of data analysis, pattern matching, and pattern recognition in the area of human activity analysis and recognition.

CFS02	コピーロボット開発に関する研究 **Exploring the Development of a Copy Robot**
Instructors	Lei JING
Course Schedule	July 1 – Sep 15
Abstract	The "copy robot" appears in Doraemon, which duplicates a person's actions. This project explores a scientific interpretation of a similar idea: reproducing human hand movements and tactile sensations through a robot. In this project, we will challenge the possiblity to teleoperate a robot arm with the haptic sensors on both robot hands and human hands. And to verfiy the whether the closeloop feedback between the robot and human can essentially improve the teleoperation efficiency. In this project, the students can expect to learn the following knowledge and skills: - fundamental working mechanism of the tactile sensors - robot arm control - motion capture system usage - robot and hand operation simulation with Unity Seminar Schedule: stage 1 (Jul. 1~15) 　　　: Project understanding, definition of the system, task assignement, make the development plan. stage 2 (Jul. 16~Aug.31) 　　　: system development and evaluation stage 3 (Sep.1~Sep.15) 　　　: summary on the project and prepare the presentation

CFS03	**Performance Improvement of an Application Using an FPGA Board**
Instructors	(Main)　SAITO Hiroshi (Sub)　KOHIRA Yukihide, TOMIOKA Yoichi
Course Schedule	June 15 – September 18 * Product creation：June 15 – September 11
Abstract	Objective: The main objective of this seminar is to accelerate an application using a field programmable gate array (FPGA) board. Through this seminar, students learn circuit design, performance improvement, or power optimization. Moreover, students learn how to use a tool such as Electronic Design Automation (EDA) tool for their development. Through the seminar, students study 1. how to model an application using a language 2. how to use a tool 3. how a synthesized circuit works on an FPGA board 4. evaluation of the developed circuit Method: 1. Selection of an application such as image processing 2. Modeling of the application using a language 3. Synthesis of an integrated circuit using Intel Quartus Prime or Xilinx Vitis 4. Simulation of the synthesized circuit using a simulator 5. Execution of the synthesized circuit