

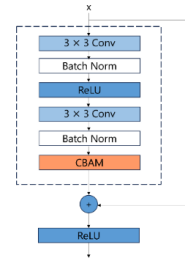
GS Abstract

GS1 Machine Learning & Autonomous Driving (5) Chair

GS1-1 Automatic classification of respiratory sounds by improving the loss function of ResNet

Ryusei Oshima¹, Tohru Kamiya¹, Shoji Kido²
(¹Kyushu Institute of Technology, Japan), (²Osaka University, Japan)

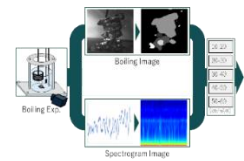
Respiratory diseases cause 8 million deaths annually, and this number is expected to increase. Breath auscultation, a primary diagnostic method, is noninvasive, repeatable, and immediate, but faces challenges such as reliance on skilled practitioners, difficulty in quantitative assessment, and limited accessibility in developing regions or disaster sites. To address these issues, we developed a deep learning-based breath sound classification system using the ICBHI 2017 dataset. Our method classifies breath sounds into four categories: Normal, Crackle, Wheeze, and Crackle and Wheeze. We use ResNet-34 as the base model, which is enhanced with CBAM for better spatial and channel feature extraction. To deal with class imbalances, we incorporate Focal Loss. The system achieves accuracy of 0.732, SE of 0.607, SP of 0.843, and ICBHI of 0.725.



GS1-2 Classification of Heat Transfer Coefficient Using Deep Learning with Information from Boiling Images

Fuga Mitsuyama, Ren Umeno, Tomohide Yabuki, Tohru Kamiya (Kyushu Institute of Technology, Japan)

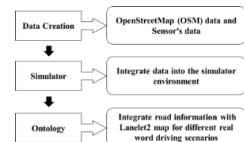
Recently, the high integration of electronic devices in many products has led to an increase in heat generation density. Boiling-cooling is attracting attention as a method that can efficiently cool heat sources. In this paper, we propose a method to predict the heat transfer coefficient (HTC), which is important for the design of cooling systems, from boiling sound data and boiling images using deep learning. This model learns the physical law of boiling by considering the information of bubbles, which significantly affects the HTC value, and improves the prediction accuracy compared to the conventional method using only the boiling sound data.



GS1-3 A Data Format Integration of Open-Street-Map and Lanelet2 Toward the Ontology Framework for Safety Autonomous Driving systems

Obada Al aama¹, Takahiro Koga¹, Tomoki Taniguchi¹, Davaanyam Jargal¹, Junya Oishi², Shigeru Nemoto², Wataru Mizushina², Kazuki Hirao², Hakaru Tamukoh¹, Hiroaki Wagatsuma¹
(¹Kyushu Institute of Technology, Japan, ²Aisan Technology Co., Ltd., Japan)

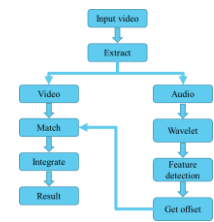
This study proposes a framework integrating OpenStreetMap (OSM) data with ontology-based systems to enhance autonomous driving systems. OSM provides static geographical data, while the Lanelet2 mapping framework incorporates lane-level road information and topological relationships, enabling advanced testing of vehicle behavior. Ontology-based integration offers semantic representations of road elements and traffic rules, supporting realistic modeling of complex driving scenarios. This structured approach ensures accurate simulation and testing, facilitating applications such as traffic analysis and route optimization, while improving scalability, precision, and safety in autonomous vehicle development.



GS1-4 A Sound-Based Timing Synchronization of Multiple Video Data from Different Cameras Attached in a Vehicle in the Aim of Driving Behavior Analyses

Davaanyam Jargal¹, Rena Kato¹, Tomoki Taniguchi¹, Kosei Shibata¹, Takahiro Koga¹, Obada Al aama¹, Hakaru Tamukoh¹ and Hiroaki Wagatsuma¹ (¹Kyushu Institute of Technology, Japan)

The environmental monitoring from a vehicle on the road is important for the driving behavior analysis as well as the monitoring of driver's operations. A light weight mobile camera is useful for the record of multiple directions from the vehicle simultaneously; however the timing synchronization is an issue need to be solved. In this purpose, we proposed the sound-based method to synchronize different videos recorded with environmental sounds. In this task, the extraction of common sound features and amplifying of the features are necessary to superimpose those sound profiles to find consisting time points. In the validation the effectiveness, we used recoded videos from the bus driven by an expert driver.



GS1-5 Intelligent Path Planning for Robots and Practical Implementation of Programmable Headlights for Autonomous Vehicles **remote presentation**

Farkad Adnan, Abdul Samad Bin Shibghatullah, Mohd Radzi Bin Aridi (Universiti Tenaga Nasional (Uniten), Malaysia)

The ability to move is essential for the development of intelligent robots for autonomous navigation. Neural networks outperform traditional methods in modeling complex relationships and identifying patterns, but current systems are limited to specific robots and sensors. This paper presents a universal method for interpreting data from different 2D sensors, predicting distances between robots and walls, and using neural networks for navigation. The goal is to create a versatile algorithm that can be applied to different robots and programmable lamps, reducing accidents. The thesis also explores programmable lamps that block light from reaching the eyes of passengers, using one network to determine free space using odometry data and another to find safe paths while avoiding obstacles. Simulated path examples will be presented.

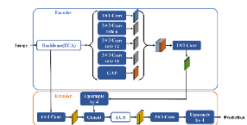


GS2 Image Processing I (5) Chair

GS2-1 Recognition of Plastic Bottles Region Using Improved DeepLab v3+

Yusuke Murata, Tohru Kamiya (Kyushu Institute of Technology, Japan)

The shortage of factory workers is a major problem in Japan. This paper focuses on sorting plastic bottles at waste disposal plants as one of the solutions. We try to realize automation by recognizing plastic bottles from images and gripping them with a robot arm. In this paper, we propose an image analysis method limited to plastic bottles of 500 ml capacity. As a basic study, experiments were conducted to investigate how accurately a single plastic bottle can be recognized in an image. The method is semantic segmentation, and DeepLab v3+ was used as the deep learning model, with improvements by ECA block and Mish activation function. We compared the methods and found that the proposed method showed improvement in the area of misrecognition in the base model.

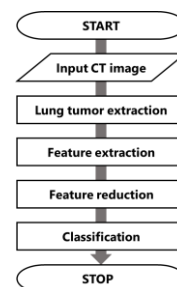


GS2-2 Non-Invasive Classification of EGFR Mutation from Thoracic CT Images Using Radiomics Features and LightGBM

Reo Takahashi¹, Tohru Kamiya¹, Takashi Terasawa², Takatoshi Aoki²

(¹Kyushu Institute of Technology, Japan), (²University of Occupational and Environmental Health, Japan)

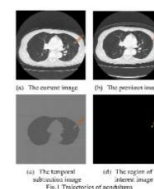
Cancer caused 9.7 million deaths in 2022, including 1.8 million from lung cancer, the leading cause of cancer death. EGFR mutation testing is essential for lung cancer treatment planning, but it is invasive and visual identification from chest CT images is difficult. This paper proposes a computer-aided diagnosis system to identify EGFR mutation status. Lung tumor regions were automatically extracted and radiomics features were obtained. Dimensionality reduction was performed using null importance, variance inflation factor, and recursive feature elimination. The method was applied to 143 cases and achieved 84.6% accuracy, 94.8% true positive rate and 25.5% false positive rate. The results suggest that CAD systems can improve the non-invasive detection of EGFR mutations in lung cancer.



GS2-3 Detection of Lung Nodules from Temporal Subtraction CT Image Using Elastic Net-Based Features Selection

Natsuho Baba, Tohru Kamiya (Kyushu Institute of Technology, Japan)
Takashi Terasawa, Takatoshi Aoki (University of Occupational Health)

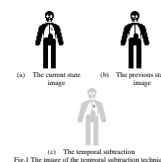
CT (computed tomography) is mainly used to diagnose lung cancer. Many CT images impose a heavy burden on visual screening, so a CAD (computer-aided diagnosis) system is expected to reduce the burden. In this paper, we propose an image analysis method to detect lung nodules from chest CT images using machine learning techniques. The best results were obtained for the method using LightGBM with feature reduction by Elastic Net.



GS2-4 Detection of Lung Nodules from CT Image Based on Ensemble Learning

Natsuho Baba, Tohru Kamiya (Kyushu Institute of Technology, Japan)
Takashi Terasawa, Takatoshi Aoki (University of Occupational Health)

Lung cancer is the most diagnosed cancer worldwide and the leading cause of cancer-related deaths, making early detection and treatment crucial. One method used in computer-aided diagnosis (CAD) systems is the temporal subtraction of images by performing a different operation between the current and previous images. In this study, radiomic features are extracted as explanatory variables from the temporal subtraction images. Feature selection is performed using Elastic Net, followed by the application of machine learning methods. Finally, ensemble learning is applied to classify unknown data into two categories: positive and negative lung nodules.

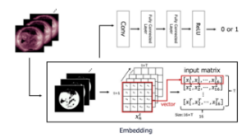


GS3 Image Processing II (4) Chair

GS3-1 Shape-Preserving Embedding Technique for Binary Classification of Video Image of the Solar Surface

Iori Tamura, Akiko Fujimoto, Soichiro Kondo, Reiri Noguchi (Kyushu Institute of Technology, Japan)

We study the embedding technique on the binary classification of video images as the explanatory variable. In this study, we assume the shape on video frame image have high sparsity and strong characteristic time evolution. In the embedding process, 2-dimensional image is resized keeping shape characteristics of the image and converted to a vector. The embedding allows dimensionality reduction from a 3-dimensional array (video image) as input data for machine learning to a 2-dimensional array of time sequences of embedded vectors. Using solar surface video images in the space weather field, we present evaluation experiments on multiple models with different embedding sizes, transformation formulas, and number of layers in the CNN.



GS3-2 Seated Posture Estimation Based on Monocular Camera Images

Hitoshi Shimomae, Tsubasa Esumi, Noriko Takemura (Kyushu Institute of Technology, Japan)

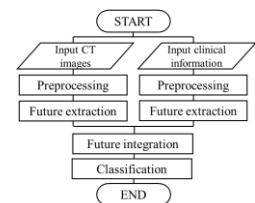
Poor seated posture significantly strains the body, leading to symptoms like shoulder stiffness and back pain. While research on seated posture estimation using images has been active, many studies focus on extreme postures not typically seen in daily desk work. This study aims to estimate common postures, such as slouching, which are often experienced in everyday settings. Due to the lack of medical quantitative metrics for evaluating posture quality, we manually annotated some of our collected posture data and used semi-automatic annotation by SVM to build a dataset. Using this dataset, we trained deep learning models for posture estimation with different input data types: RGB images, silhouette images, and posture key points, and compared their performance.



GS3-3 Identification of lung nodules based on combining multi-slice CT images and clinical information

Yuto Nishitaki, Tohru Kamiya (Kyushu Institute of Technology, Japan) Shoji Kido (Osaka University, Japan)

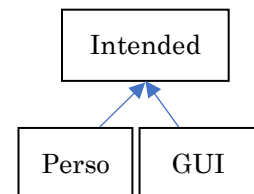
In recent years, a CT scan of the chest has played an important role in the diagnosis of lung cancer. However, the large number of CT images generated in a single examination places a heavy burden on the physician reading them. To solve this problem, computer-aided diagnosis (CAD) systems are being introduced. Conventional CAD systems are based on methods that use only image information. Recently, however, research on systems that incorporate clinical information in addition to image information has attracted attention. In this study, we propose a method for identifying nodular shadows that integrates a composite image created from multi-section CT images with clinical information such as the patient's age, sex, and medical history as recorded in the medical record.



GS3-4 Graphical User Interface (GUI) Design for Mobile Commerce Site for Women Seller in Rural Area **remote presentation**

Kho Irene¹, Dr. Shayla Islam¹, Abdul Samad Shibghatullah²
(¹UCSI University, Malaysia), (²University Tenaga Nasional, Malaysia)

GUI is a medium that allows users to communicate with electronic devices. Good GUI design is important because it allows users to learn how to use a system in the shortest amount of time and effectively operate it. Hence, a well-designed GUI for m-commerce sites is crucial to aid women sellers in rural areas to sell their products directly to customers. Unfortunately, the GUI of m-commerce sites caters only to IT-literate users with fast internet connections. Existing m-commerce sites' GUIs are compact with information. This may lead to an interface design that looks busy and messy unless women sellers are given proper guidance by IT experts. A research review about GUI requirements caters for women sellers' according to their personality types and hopes that they will be willing to explore m-commerce sites.

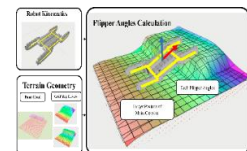


GS4 Robotics (5) Chair

GS4-1 Obstacle-Aware Autonomous Flipper Control Method Based on Terrain Geometry

Kotaro Kanazawa, Noritaka Sato, Yoshifumi Morita (Nagoya Institute of Technology, Japan)

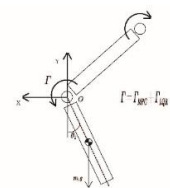
Rescue robots play crucial roles in search and rescue missions at disaster sites. Crawler mechanisms, which are valued for their high traversability on unstructured terrain, can be equipped with flipper arms featuring four single-rotation joints to enhance their performance. However, operating these flippers is challenging. Although various control methods have been developed recently, difficulties persist in adapting to three-dimensional uneven terrains and in avoiding interference between flippers and the environment. In this study, we propose an obstacle-aware autonomous flipper control method that actively adjusts the flippers based on the progress of the robot and terrain geometry.



GS4-2 An Adaptive Control Method for a Knee-Joint Prosthetic Leg Toward Dynamic Stability and Gait Optimization

Ge Yiqian¹, Purevdorj Choisuren¹, Shintaro Kasai¹, Hiroaki Wagatsuma¹
(¹Kyushu Institute of Technology, Japan)

This study presents a control strategy for the knee joint of a prosthetic leg designed for below-knee amputation people. Model Predictive Control (MPC) and Linear Quadratic Regulator (LQR) are considered to be useful for the achievement of dynamic stability and adaptive motion control. MPC is employed to optimize the knee joint's trajectory in real-time, ensuring smooth and efficient motion while accommodating gait characteristics. LQR is integrated to regulate the center of mass (CoM) dynamics, maintaining overall stability by leveraging feedback from the prosthetic leg and user inputs. In the computer simulation, the feasibility of those control approaches will be examined whether they enhance a smooth control, in the sense of the stability and adaptability in human daily activities.

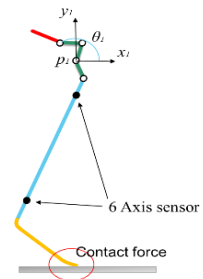


GS4-3 A Gait Analysis with Multibody Dynamics Toward Energy-Efficient Active Knee Prostheses

Purevdorj Choisuren¹, Ge Yiqian¹, Shintaro Kasai¹, Batbaatar Dondogjamts², Erdenesuren Naranbaatar² and Hiroaki Wagatsuma¹

(¹Kyushu Institute of Technology, Japan; ²Mongolian University of Science and Technology, Mongolia)

In general, prosthetic knee users have a large stress in the locomotion due to less smoothness and unnecessary energy consumption. In the passive prosthesis, it is difficult to regulate the stiffness depending on the ground contact force. In consideration of designs for such an adaptivity to improve passive systems, we propose an artificial knee kinematics design to absorb the redundant contact force for the smooth and stable walking and explore necessary constraints for the proposed mechanics to be able to have multi-functions not only for walking but also knee flexion accumulating the power for jumping. In the analysis, we used Multibody Dynamics (MBD) to investigate. This result will contribute to design an integrated dynamic model by incorporating a flexible body and ground contact forces in various purposes.

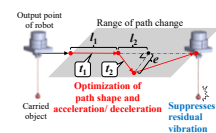


GS4-4 Suppressing of Multi-Axial Vibration Caused in Carried Objects by Robot Using a Heuristic Algorithm Based on Evaluation of Actual Machine Information

Yusuke Ueno¹, Hiroki Noguchi¹, Fumitoshi Shimono¹, Hiroshi Tachiya²

(¹Komatsu University, Japan) (²Kanazawa University, Japan)

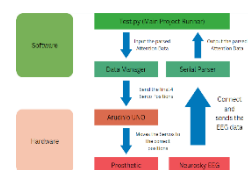
Residual vibrations induced in objects carried by robots cause the positioning accuracy to deteriorate, which makes the installation of carried objects difficult. This study proposes a method for determining a trajectory that can suppress residual vibration using a heuristic algorithm, based on the behavior of an object to be carried, which is measured by actually operating a robot. The method does not require a kinetic analysis of the carried object and can be applied to robots still in operation on the production line. Trajectories were generated for a commercially available industrial robot to suppress residual vibrations in two axial directions for a pendulum-shaped object to be transported. A significant reduction in vibration amplitude was achieved by optimizing path shape, acceleration and deceleration.



GS4-5 Developing Low-Cost BCI-Based Brain-Limb Interaction Device with Prosthetic Hand remote presentation

Nethika Jayith Rajapakse(International Bilingual International Science Park, Taiwan)

Inventions that are designed to heal the body and/or mind should always be sought. Currently, too many people are lacking access to cheap prosthetic devices, especially those that allow neural connections to be gained with such devices. This is the reason why this study intends to propose a low-cost invention that is able to enable people to gain back concentration with limb use using Python Programming language, an EEG Neurosky headset, an Arduino, and a 3D-printed prosthetic hand. With our implementation, the proposed method can explore the boundaries of improving attention and continue to develop higher-level BCIs for the mind-limb connection, improving on current-day prosthetics and concentration/limb connection rehabilitation.

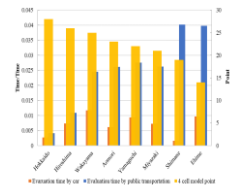


GS5 Applications I (6) Chair

GS5-1 A Study on Local Airports Contributions to Tourism Industry in Japan

Tsutomu Ito¹, Seigo Matsuno¹, Makoto Sakamoto², Satoshi Ikeda², Takao Ito³
 (¹Ube National College of Technology, Japan), (²University of Miyazaki, Japan)
 (³Hiroshima University, Japan)

This study examines the impacts of local airports on the regional tourism industry in Japan. A series of indexes of the tourists and a new measure of the time index have been developed based on our four-cell model to analyze the correlation between different indexes such as the number of airport tourists and the time used by public transportation. During the verification process, a correlation has been discovered between the number of tourists in the city where the airport is located and the number of airport users for specific regionally managed airports. Furthermore, regarding access to tourist attractions from airports, a strong negative correlation is confirmed between the evaluation index and the state of development of public transport, suggesting the importance of developing public transport, including airports, in attracting tourists.



GS5-2 Analysis of Careless Mistakes Using Gaze Information

Ryota Yabe, Noriko Takemura (Kyushu Institute of Technology, Japan)

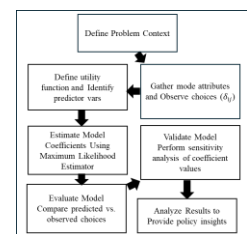
Careless mistakes are caused by a lack of concentration, time pressure, and information overload due to multitasking. If we predict careless errors, they could be helpful in various situations, such as learning support, business efficiency improvement, and medical diagnosis support. However, it is challenging to reproduce careless error situations, and few studies have been on predicting careless errors. Therefore, we focus on Shogi (Japanese chess), where situational awareness is complex, and players must maintain long periods of concentration, making careless mistakes. In this study, we collected eye-tracking data of players during a game and annotated careless errors based on the game's contents and surveys from the players. By analyzing this data, we have examined the conditions under which careless mistakes occur.



GS5-3 A Mathematical Framework for Logit Model in Transportation Mode Choice Analysis

Ahmad Altaweel¹, Kazuhito MINE¹, Bo-Young Lee², Jang-Sok Yoon², Hiroaki Wagatsuma¹
 (¹Kyushu Institute of Technology, Japan; ²Logistics Revolution Korea, Korea)

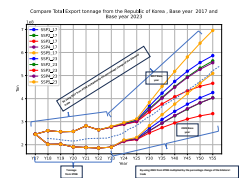
Traditional transportation demand forecasting has relied on massive zone-specific aggregations, which assume a linear demand increase. Such models may lack the flexibility needed to perform dynamic and context-sensitive analyses. Recently, disaggregated behavioral models have gained prominence for requiring less data and enabling sensitivity analyses in policy decisions. This study explores the feasibility of a model focusing on the mathematical formulation and validation of the transportation mode choice model. The study uses the logit model with a non-linear probability distribution function represented by a logistic curve and incorporates a linear combination of independent predictor variables. The mathematical model is examined for its ability to estimate choice probabilities. The methodology is formulated to be adaptable to diverse contexts that provide an analytical framework for transportation systems independently of geographic or demographic considerations.



GS5-4 A Computational Approach for Global Trade Analysis in Korea Contributing to the Forecasting of Future Efficacy in Global and Domestic Korean Transportations

Bo-Young Lee¹, Ahmad Altaweel², Kazuhito Mine², Jang-Sok Yoon¹, Hiroaki Wagatsuma²
(¹Logistics Revolution Korea Co., Korea; ²Kyushu Institute of Technology, Japan)

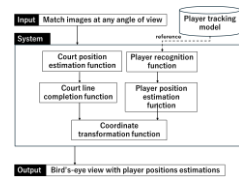
Economic forecasting studies are integral for shaping strategic policy decisions by providing data-driven insights that guide resource allocation, logistics and transportation, and long-term planning. This study investigate the trade dynamics of the Republic of Korea through the Global Trade Analysis Project Recursive dynamic GTAP-RD model with the GTAP v11 database to forecast economic scenarios and Shared Socioeconomic Pathways (SSPs) serve as growth trajectories. The analysis centers on the Republic of Korea's key trading partners, as identified by the GTAP database, and top trading sectors from the Korea Transport Database (KTDB) to compare the key influencers on Korea's trade thereby providing deeper strategic economic planning. This study investigates further the involvement of Korea's logistics and transportation by focusing on changes in import/export tonnage to inform infrastructure planning and strategic transport development. The evaluation of Korea's trade in the global context is of the essence to ensure adaptive logistics, backing economic resilience, and aligning with changeable global trade conditions.



GS5-5 Fundamental Research on Athlete Positions Estimation in Indoor Sports at Various View

Iori Iwata, Yoshihiro Ueda, Kazuma Sakamoto, Riku Kaiba (Komatsu University, Japan)

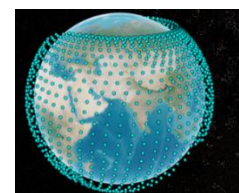
In sports such as volleyball, basketball, and soccer, the positioning of players is of great importance for the purposes of tactical analysis. In many cases, this is researched using image recognition techniques, which facilitate the creation of visual representations of player positions. Typically, images captured by cameras are transformed into a bird's-eye view through the application of algorithms such as projective transformation. Traditional methods rely on four reference points such as court line intersection to transform images into a bird's-eye view, which can be difficult to obtain because camera angles and camera angles of view change during a match. This research proposes a new method to overcome these limitations by automating the selection of reference points using net and court line coordinates. This approach enables accurate player position estimation even with partial court images and historical video data, expanding the possibilities for tactical analysis in volleyball.



GS5-6 Overview of the development of low earth orbit satellite navigation enhancement technology **remote presentation**

Dingcheng Tang*, Jinliang Wang, Jianfeng Shan, and Guoji Zou
(Space star technology co, LTD, Beijing, China)

Low Earth Orbit (LEO) satellites are expected to become a new increment in the development of the new generation of satellite navigation systems. The development direction of satellite navigation enhancement is gradually tilting towards the low orbit field, becoming a new growth and empowerment point for the next generation of satellite navigation. This article was on discussing the new development opportunities brought by low orbit navigation enhancement technology for building a Global Navigation Satellite Systems (GNSS) global space-based monitoring network, providing global quasi real time high-precision services, and providing global high integrity monitoring services.

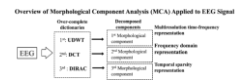


GS6 Applications II (5) Chair

GS6-1 Signal Decomposition and Noise Reduction in Single-Channel EEG: A Morphological Component Analysis (MCA) Approach

Kosei Shibata¹, Yide Yang¹, Rena Kato¹, (Kyushu Institute of Technology, Japan),
Hendry Ferreira Chame², Laurent Bougrain² (Université de Lorraine, CNRS, LORIA, France),
Tomohiro Shibata¹, Hiroaki Wagatsuma¹ (Kyushu Institute of Technology, Japan)

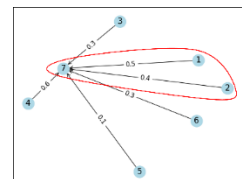
This study applies the Morphological Component Analysis (MCA) to single-channel EEG data obtained during human-to-human interactions in a board game (Hex-game). MCA, a dictionary-based signal decomposition method, separates signals into distinct morphological components. It enables the extraction of plausible brain activity and the removal of noise, such as ocular and muscular artifacts. By focusing on neural dynamics in interactive settings, this approach highlights the relationship between cognitive processes and social behavior. The approach suggest that MCA offers a promising framework for EEG analysis in complex, dynamic environments, combining effective feature extraction with robust artifact removal.



GS6-2 Variable Selection Methods for Multivariate Time Series Data Using Multivariate Granger Causality

Keita Ohmori^{1,2}, Toshiki Saitoh¹, Akiko Fujimoto¹, Eiji Miyano¹
(¹Kyushu Institute of Technology, ²SUMCO, Japan)

In this paper we study variable selection methods for multivariate time-series data. Hmamouche et al. (2018) proposed a method that first constructs a causal graph based on Granger causality among time-series data, and then selects variables from clusters formed by clustering the vertices corresponding to each variable. However, this method only performs pairwise Granger causality tests, which may not fully capture the interactions among variables. To address this issue, we propose a variable selection method that performs multivariate Granger causality tests on all combinations of explanatory variables with respect to the target variable, selecting the combination with the strongest causality. Our new method successfully constructs a predictive model with a higher accuracy compared to the previous method.



GS6-3 A Support System for a Visually Impaired Person Finding Bus Route Numbers Employing MY VISION

Daichi Nanaura, Seiji Ishikawa, Yui Tanjo (Kyushu Institute of Technology, Japan)

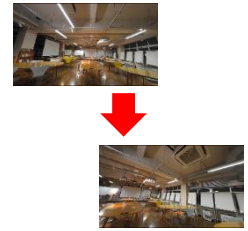
A bus is not a very convenient means for a visually impaired person because of the difficulty in identifying its route number, although it is an economical tool for travel. This paper proposes a method identifying a bus route number using MY VISION system which employs an ego camera worn by a visually impaired person. The method finds a frontal area of an approaching bus using the video which the camera provides using optical flow and the random forest based on Haar-like features. It then extracts the upper destination panel area followed by detecting a route number at the right-hand side of the panel. Finally, the detected route number is identified by template matching. In the experiment, various kinds of videos containing busses were captured and the effectiveness of the proposed method was shown.



GS6-4 Human Pose Estimation from Egocentric Videos

Shunya Egashira, Yui Tanjo (Kyushu Institute of Technology, Japan)

According to a survey conducted by the Ministry of Health, Labour and Welfare in 2019, about 30% of patients suffer from back pain and stiff shoulders. Although researches on pose estimation have been conducted for a long time, they cannot be used for daily pose estimation, because they need fixed cameras to capture target/subject motion. To solve this problem, the present paper proposes a novel pose estimation method from egocentric videos using Epipolar Geometry. It computes three rotational angles, i.e., pitch, yaw and roll, from the egocentric motion videos to evaluate differences from his/her normal motion. In the experiment, three egocentric videos were used to verify the performance and effectiveness of the proposed method and reasonable/satisfactory results were obtained.



GS6-5 Analyzing Eye-Tracking Data to Detect Joint Attention in Hexgame Experiments

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This study aims to explore the mechanisms of joint attention in Hexgame experiments by analyzing Tobii eye-tracking data. In the experiment, two participants engaged in a strategic game, during which their gaze data was recorded. Through perspective transformation, the gaze points were mapped onto the coordinates of the game board to determine whether joint attention occurred during critical game states. The primary focus of this study is the analysis of eye-tracking data to identify attention coordination between players during the progression of the game. Future work will expand this framework to assess win probabilities and predict subsequent moves, providing deeper insights into strategic decision-making.

