Session 2.3 Artificial Intelligence Applications

Time & Location: 16:00-17:30, Dec. 1, L009

Chair: Anthony Y. H. Liao (廖岳祥)

(1) A Proposal for the Global & Collaborative PBL Learning Environment where all Global Members on Different Campuses are “on the same page” throughout the Process of the Project

Tosh Yamamoto (Kansai University), Anthony Liao (Asia University), Wen-Chi Vivian Wu (Asia University), Meilun Shih (National Taiwan University), Ju-Ling Shih (National University of Tainan), and Hui-Chun Chu (Soochow University)

This paper purports to share with the higher education community the global PBL active learning curriculum and the learning environment, which have been collaboratively developed with the universities in Taiwan and Kansai University (KU). The collaborated universities developed an optimal curriculum to enhance and nurture students' "Future Work Skills 2020" defined by the Institute for the Future, such future human skills as Sense Making, Social Intelligence, Novel & Adaptive Thinking, Cross-Cultural Competencies, Computational Thinking, New Media Literacy, Transdisciplinarity, Design Mindset, Cognitive Load Management, and Virtual Collaboration. The curriculum fully employs PBL strategies in global teams, where teams for PBL are organized with students with heterogeneous cultural backgrounds in the virtual learning environment.

The basic concept of such curriculum is based on COIL (Collaborative Online International Learning), originally developed by State University of New York. COIL makes full usage of IT to generate virtual learning environment for students worldwide. In order to go beyond the COIL concept incorporating the future skills defined by IFTF, the allied universities employed PBL in global AGILE teams to deepen insights from various cultural viewpoints in terms of consensus building through team discussions.

Due to the spatial and temporal differences, enrolled students conducted their team learning activities in the virtual learning environment asynchronously, making use of IT technologies and cloud services in order to be on "the same page" in the progress of the project throughout the course.

Further, the assessment strategies to enhance students’ efficacy is the key factor in the course, which is also discussed with examples.

This paper reports the global PBL active learning curriculum and environment collaboratively developed with the universities in Taiwan and Kansai University.

(2) Examination of Indicators for Estimating Players’ Strength by using Computer Go

Yuuto Kosaka (University of Electro-Communications) and Takeshi Ito (University of Electro-Communications)

This study proposes a method to estimate players’ skill using Computer Go. “Computer Go has been considered one of the biggest challenges of artificial intelligence (AI) research. The AI of Go uses the Monte Carlo tree search (MCTS) algorithm unlike the games of chess and shogi which use the game tree search by means of the evaluation function. Further, we apply the evaluation index used in the strength estimation method for shogi to the game of Go. We analyze the game records of KGS and YUUGEN-NO-MA with the evaluation index using the MCTS winning rate. It is concluded that stronger AI is necessary for identifying strength-estimating indicators.”

(3) Consideration of Life Rhythm for Hearing-Dog Robots Searching for User

Shotaro Furuta (Nagoya Institute of Technology), Tsuyoshi Nakamura (Nagoya Institute of Technology), Yuji Iwahori (Chubu University), Shinji Fukui (Aichi University of Education), Masayoshi Kanoh (Chukyo University), and Koji Yamada (Institute of Advanced Media Arts and Sciences)

A hearing dog is a sort of assistance dog for hearing-impaired individuals. The physical touch of the dog can

alert the individuals to important sounds such as
doorbells, alarm clocks, and fire alarms. Although hearing dogs can assist people, there is an insufficient number of them around the world today. As an alternative, a hearing-dog robot has been developed. This robot can move around autonomously to search for a user and notify him or her of important sounds. In this work, we propose a exploring algorithm for the robot that considers past information about the location of the user. Specifically, this algorithm utilizes the user's life rhythm in order to achieve efficient exploring. In our experiments, our proposed algorithm showed a short time as compared with the algorithm without the user's life rhythm.

(4) Privacy-Preserving SRS Data Anonymization by Incorporating Missing Values

Wen-Yang Lin (National University of Kaohsiung), Kuang-Yung Hsu (National University of Kaohsiung), and Zih-Xun Shen (National University of Kaohsiung)

Spontaneous Reporting Systems (SRSs) refer to systems used to collect voluntary reporting of adverse drug events (ADEs), which usually contain sensitive personal privacy information. Although many scholars have proposed various privacy protection models, they overlooked characteristics of SRS data. We previously have proposed a feasible privacy model and anonymization method dedicate to SRS data. However, this method is only applicable to complete data, not considering the fact that SRS data contain a lot of missing data. In this paper, we propose a new privacy model Closed MS(k, θ*)-bounding and a new anonymization method, Closed-MSpartition, to process SRS data with missing values. We used US FDA’s FAERS data to evaluate our proposed method from the aspects of information loss, privacy risk, and data utility. The results show that our proposed new method can effectively prevent attackers from learning personal privacy without sacrificing data quality and utility.

(5) Study on Green Logistics Initiatives Through Text Mining Approach

Fuyume Sai (Daito Bunka University)

Different with the traditional, green logistics unifies sustainable economic and social development. In addition, due to the nature of cross-functional logistics activities, it brings more difficulty to green development in the logistics market. The purpose of this paper is to overview the award-gained green initiatives/practices in Japan. For doing so, text mining approach is used to analyze 52 abstracts of the green initiatives implemented during the period of 2006-2017. In contrast to most research on sustainable logistics directed towards manufacturing companies in the product-focused supply chain management, this study is positioned in the dual perspective of logistics service providers and shippers to demonstrate their combined effort of achieving sustainability goals. The results of the analysis showed that text mining is a useful tool for summarizing and presenting the data in this research area, however, how to preprocess the data more means-ends logically remains in the future.