

Summary Report

International Workshop on Affective Interaction between Humans and
Machines in Multicultural Society (IWAM2022)

Japan Advanced Institute of Science and Technology (JAIST),

Onsite and Online (via WebEx)

Prarinya Siritanawan (Last edit: 8 April 2022)

Date and Time

- March 30, 2022
- 11:00-16:00 Japan Time (UTC+09:00)
- 9:00-14:00 Vietnam & Thailand Time (UTC+07:00)

Place

Online:

- WebEx link:
<https://jaist.webex.com/jaist/j.php?MTID=mb2de61f212e0fd2d597b7c07ec7c5da7>
- Meeting number: 2518 950 3130
- Password: VRbJBXs5x58

Onsite:

- Collaboration room 7, I-56, School of Information Science, Japan Advanced Institute of Science and Technology (JAIST) (Limited number of participants due to COVID-19's measurment)

Participants

- 189 persons (Processed from WebEx's Usage Summary Report)
 - Japan Advanced Institute of Science and Technology (JAIST), Japan (31 persons)
 - Kanazawa University, Japan (1 persons)
 - Ho Chi Min City University of Education (HCMUE), Vietnam (61 persons)
 - Mahidol university, Thailand (14 persons)
 - Osaka University, Japan (2 persons)
 - Komatsu University, Japan (1 persons)
 - Asian Institute of Technology (AIT), Thailand (1 persons)
 - Unknown affiliation (Thai 12 persons, Vietnamese 60 persons, Unidentified nationals 6 persons)

Publicity

Before Event: Event Announcement through:

- Official homepage of event:
<http://www.jaist.ac.jp/event/iwam/2022/index.html>
- JAIST's News & Event
<https://www.jaist.ac.jp/english/whatsnew/events/2022/03/23-1.html>
- Mailing list in JAIST (To all faculty and students)
- Facebook page of Image Processing/Computer Vision Lab (More than 1000 followers)
<https://www.facebook.com/jaistimgprocessing/posts/2385873958229975>

After Event:

- Facebook Page of Faculty of Engineering, Mahidol University
<https://www.facebook.com/egmahidol/posts/10160306208679365>
- HCMUE website
<https://hcmue.edu.vn/vi/tin-tuc-su-kien/su-kien/1778-h-i-th-o-qu-c-t-v-i-ch-d-s-tuong-tac-c-m-xuc-gi-a-con-ngu-i-va-may-moc-trong-th-i-d-i-xa-h-i-da-van-hoa-iwam-2022>

Workshop Organizing members

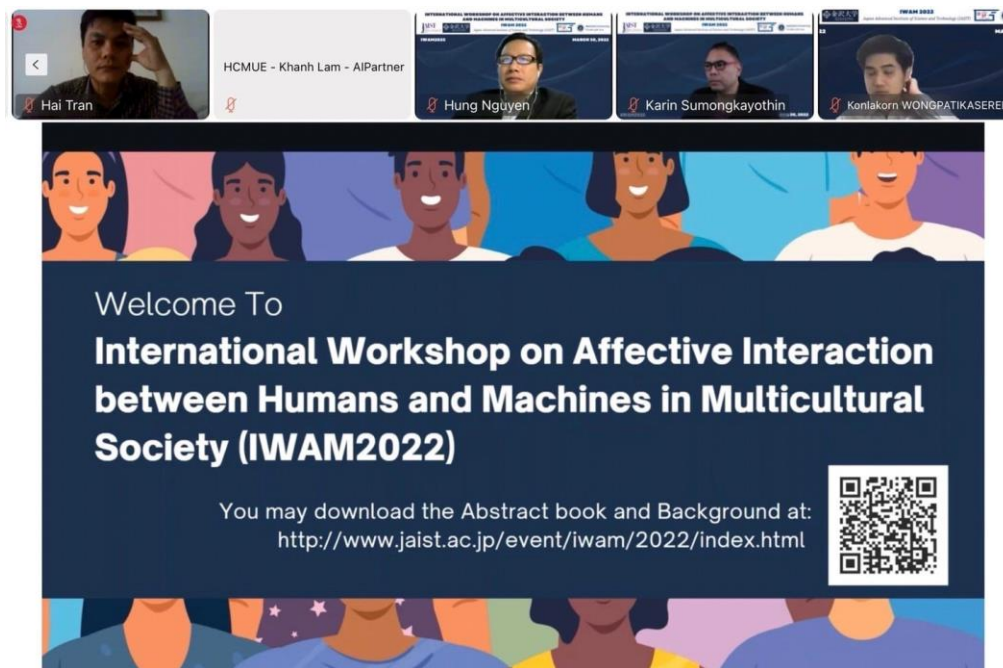
- Prarinya Siritanawan, JAIST, Japan
- Haruyuki Kojima, Kanazawa University, Japan
- Kazunori Kotani, JAIST, Japan
- Shinobu Hasegawa, JAIST, Japan
- Teeradaj Racharak, JAIST, Japan
- Natthawut Kertkeidkachorn, JAIST, Japan
- Yuntao Wang, JAIST, Japan
- Hung Viet Nguyen, HCMUE, Vietnam
- Konlakorn Wongpatikaseree, Mahidol University, Thailand
- Karin Sumongkayothin, Mahidol University, Thailand

Workshop Detail and Content

- Check the Abstract book for the list of presentation, abstract, and biography of speakers:
<http://www.jaist.ac.jp/event/iwam/2022/Downloads/Abstract-Book IWAM-2022 v3.pdf>

If the above link is not available, please contact: prarinya@jaist.ac.jp

Snapshot of the event



Online Participants waiting for the beginning of event in WebEx



Onsite Participants at the Collaboration room 7, I-56, School of Information Science, JAIST



Opening Speech from Prof. Hiroyuki Iida, Vice President of Japan Advanced Institute of Science and Technology (JAIST), Japan



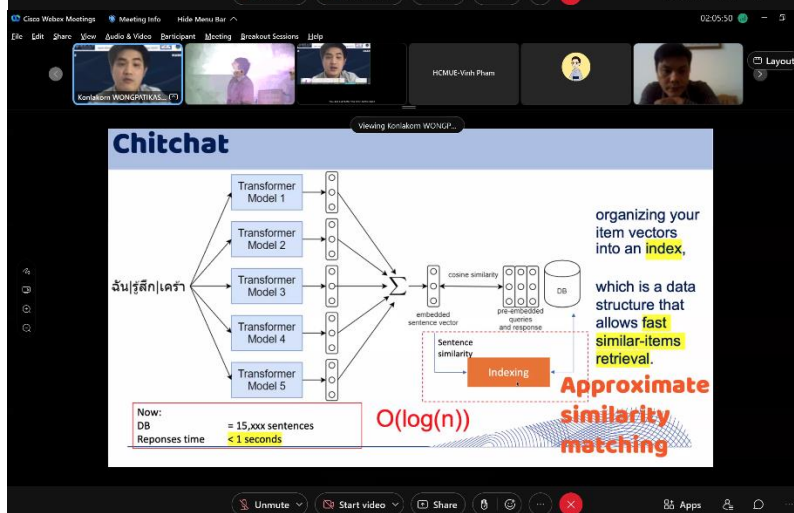
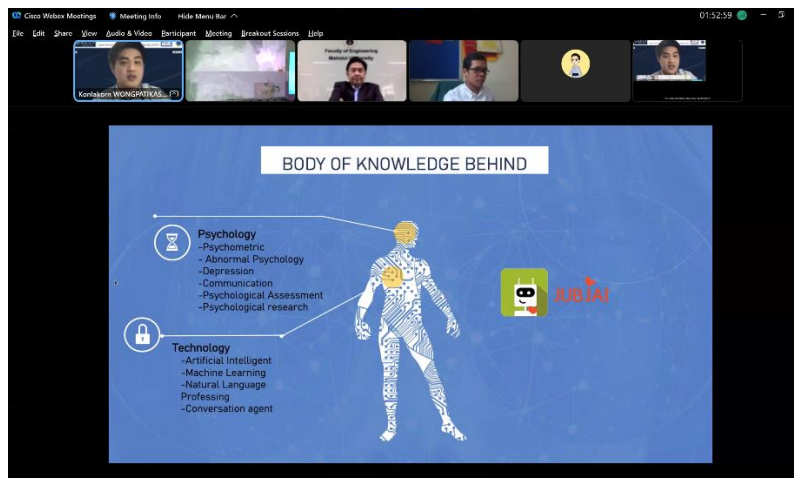
Opening Speech from Dr. Bui Tran Quynh Ngoc, Vice President of Ho Chi Minh City University of Education



Opening Speech from Assoc. Prof Dr. Jackrit Suthakorn, Dean of Faculty Engineering, Mahidol University, Thailand



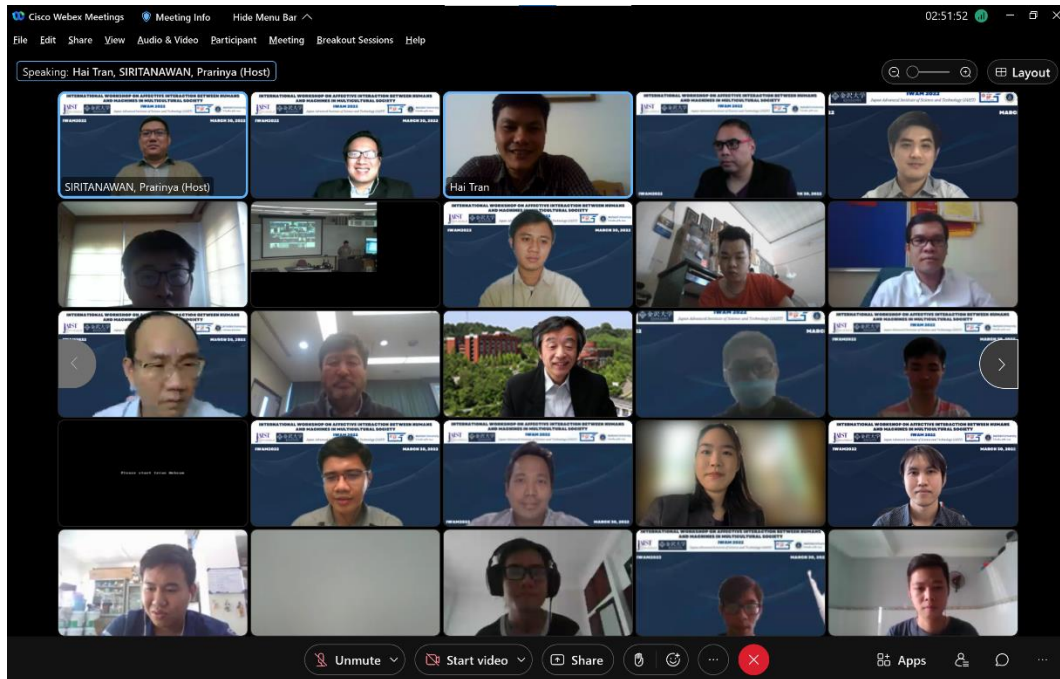
Briefing session of workshop and introduction of joint international collaboration, Prarinya Siritanawan, JAIST, Japan



Invited Talk #1, Thailand Mental Health Technology and Innovation Center, Konlakorn Wongpatikaseree, Mahidol University, Thailand

The top screenshot shows a video conference interface with a large central video feed of Hai Tran, a man with dark hair wearing a plaid shirt. Above the feed is a row of smaller video feeds for other participants. The middle screenshot shows a presentation slide for the 'INTERNATIONAL WORKSHOP ON AFFECTIVE INTERACTION BETWEEN HUMANS AND MACHINES IN MULTICULTURAL SOCIETY (IWAM 2022)'. The slide title is 'Applying deep learning for HSCode classification based on goods description' by Hai Tran - AI4SE Lab. It features logos for JAIST, NIE, and SP. The bottom screenshot shows a slide titled 'AI4SE Lab' and 'HSCode classification'. It displays a hierarchical tree diagram for 'Office Table made of Wood' with levels: Section (94), Chapter (9403), Heading (940300), Sub-Heading (94030000), and Extension (Singapore) (9403000000). The diagram also lists descriptions for each level, such as 'Miscellaneous Manufactured Articles' and 'Wooden furniture for offices'.

Invited Talk #2, Applying deep learning for Hscode classification, Hai Tran, Ho Chi Minh City University of Education, Vietnam



Group Photo of morning session

Proposed Methodology

Convolution + LeakyRelU+ Maxpooling

Input: $I_{k,c1}$ (128x128x3), $I_{k,c2}$ (128x128x3)

Processing: $I_{k,c1}$ and $I_{k,c2}$ are processed through convolutional layers (64x64x64, 32x32x64, 16x16x64) and flattened. The output is combined with $I_{k,c2}$ and passed through a Linear Regression model $LR()$ to generate $I_{k,c1c2}$ (128x128x3).

Legend:

- I : Images
- $c1, c2$: Ekman's basic emotions, $c1 \neq c2$
- k : Image index
- v : Expression features
- \bar{v} : Average expression features
- $f()$: Facial expression recognition model
- $LR()$: Linear regression model
- $G()$: Generator

Figure 6: The proposed methodology

Participants (83):

- SRISIL, Wajira
- SUGITA, Kazuki
- SukritJaidee
- Ta Luyen
- Tang Thuc Man
- Thannicha
- Tieu Hoang Tuan
- TRAN, Minh Tuan
- WIJITKUNSAWAT, Wuttichai
- VÔ Hoài Nam
- WANG, Yao
- Yuntao Wang

Student Session #1: Compound Facial Expressions Generation with Arithmetical Features Space, Win Shwe Sin Khine, JAIST, Japan

Engagement Support

- Teachers support Behavioral Engagement based on Each Engagement States in Traditional Education.

The diagram illustrates the relationship between Learners and Teachers in supporting behavioral engagement. Learners' engagement is categorized into Affective, Behavioral, and Cognitive states, which are interconnected and depend on each other. These states are influenced by Learning Reaction, Learning Activity, and Learning Goals. The Teacher's role is to provide Classroom Atmosphere, Instruction, and Formative Assessment (Minitest) to support these states. The overall interaction aims to make learners active.

Participants (97):

- SIRITANAWAN, Prariya (Host, me)
- ZHENG, Xianwen
- CHAIYAROJ, Attawit (Cohost)
- Kazunori Kotani (Cohost)

Chat:

from SIRITANAWAN, Prariya to everyone: 12:40 PM
After the end of Prof. Hai Tran talk. We are going to have the photo session. Please stay with us for a bit after the presentation. Thank you.

from Setthawut to everyone: 1:58 PM
Here's a fancub of Khun Sattaya Singkul

Student Session #2: A Learner Engagement Estimation and Support System Using PC Built-in Camera, Xianwen Zheng, JAIST, Japan

Robust feature for Facial Expression Recognition (FER) systems

The flowchart illustrates the process of facial expression recognition. It starts with AI Face Detection and AI Facial Keypoint Detection. These lead to AI Face Pose Estimation, AI Eye Movement, and AI Emotion Prediction. These components feed into a Rule-based Expert system, which produces a Predicted Emotion. This is then refined by another Rule-based Expert system (Rule from psychologist) to produce the Final Predicted Emotion. The process is marked as 'In progress'.

Participants (96):

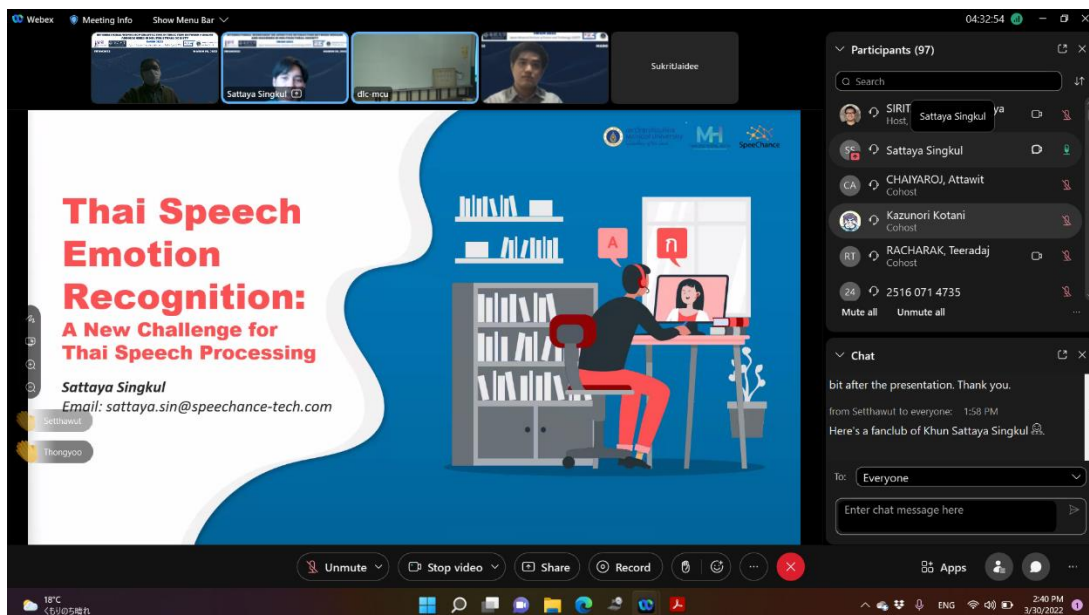
- SIRITANAWAN, Prariya (Host, me)
- SukritJaidee
- CHAIYAROJ, Attawit (Cohost)
- Kazunori Kotani

Chat:

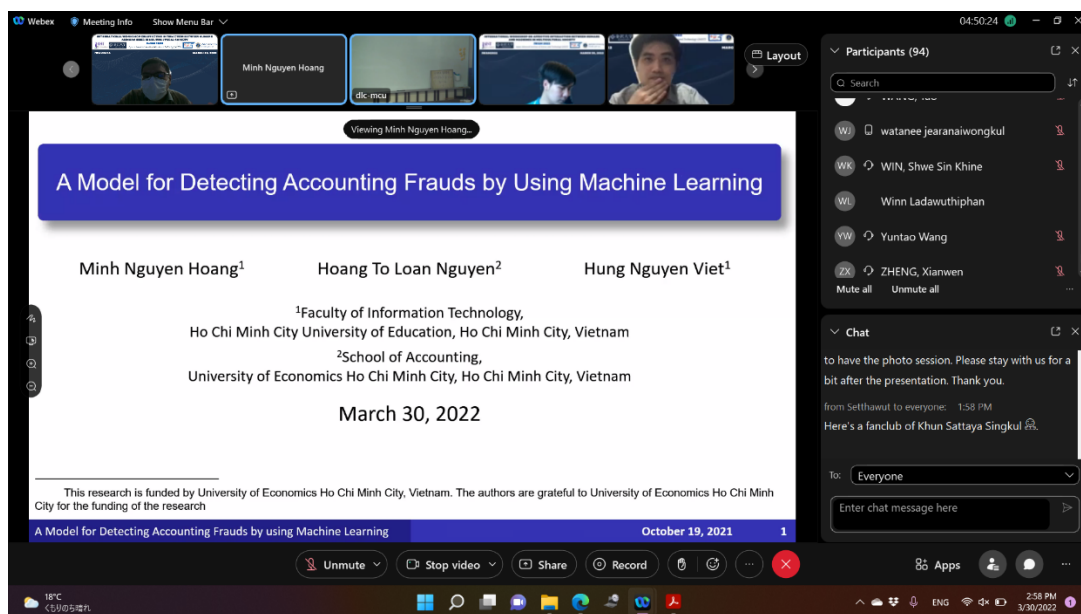
from SIRITANAWAN, Prariya to everyone: 12:40 PM
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from Setthawut to everyone: 1:58 PM
Here's a fancub of Khun Sattaya Singkul

Student Session #3: Robust feature for Facial Expression Recognition (FER) systems, Sukrit Jaidee, Thailand Mental Health Technology and Innovation Center (MH), Mahidol University, Thailand



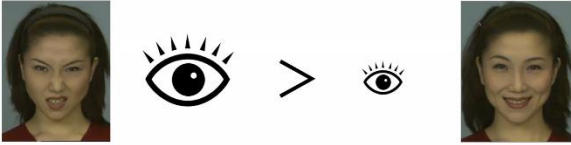
Student Session #4: Thai Speech Emotion Recognition: A New Challenge for Thai Speech Processing, Sattaya Singkul, Thailand Mental Health Technology and Innovation Center (MH), Mahidol University, Thailand



Student Session #5: A Model for Detecting Accounting Frauds by using Machine Learning, Minh Nguyen Hoang, Ho Chi Minh City University of Education, Vietnam

Introduction

Emotional faces (One's facial expression) moves others(observers)' emotion



Pupil size of observers expands with angry faces but did not with happy faces (e.g. Yoshimoto, 2013)

Experiment 2

- Strong relation is known between Emotion recognition and Autistic Traits.
 - *Autistic people are not good at Emotion perception and communication.*
- Measures for Communication/Autistic Traits
 - Autistic spectrum Quotient (AQ)
 - Broad Autism Phenotype Questionnaire(BAPQ-J)
 - Daily-life Skill Scores (DLSS)

Take-home message

- We, humans, biologically respond to emotional faces/expressions.
- The sensitivity/responsiveness depend on their traits and conditions, inferring acquired factors in these reactions.
- **For Further Research:**
 - Human affective interaction **to machines** is challenging.
 - Individual differences and Cultural influence would be important factors to understand human behaviors.

Acknowledgement:
This work was collaborated with Monoko YAMADA (2017)

Haruyuki KOJIMA
Psychology and Cognitive Science
Kanazawa University, JAPAN
hkojima@staff.kanazawa-u.ac.jp

Invited Talk #3: Sensitivity of emotional faces and its relation to observer's trait, Haruyuki Kojima, Kanazawa University, Japan

Engagement Analysis Platform

Face Tracking

- Facial expression
- Action units
- Emotion detection

Voice Detection

- Monologue
- Onomatopoeia
- Intonation

Device Interaction

- Operation
- Screen change
- Watching history

Not Special Equipment
Raw Data in Learning Activity

Item Response
Association Rule Mining
Time Series Clustering
Bayesian Estimation
Deep Learning
Time Series Analysis (Standardization+Privacy)
Process Analysis Platform

P-Adaptation

- Engagement estimation
- Robot interaction
- Gamification

P-Role Modeling

- Ideal process visualization
- Quality assurance
- Correlation

P-Feedback

- Transition
- Comparison
- Performance

Breakthrough of LcP (Adaptive Support)
Contribution in LcP

Conclusions

Robot as Learning Partner

- Engagement Estimation**
 - Need to improve accuracy and robustness
- Interaction Network**
 - Sota Interactions have some effect on continuing and improving engagement
- Model Update/Adaptation**
 - Satisfaction with third period is improved.

Developed Robot Interaction has potentials

- As trigger for self-monitoring
- As cue for engagement improvement

3. Adaptation

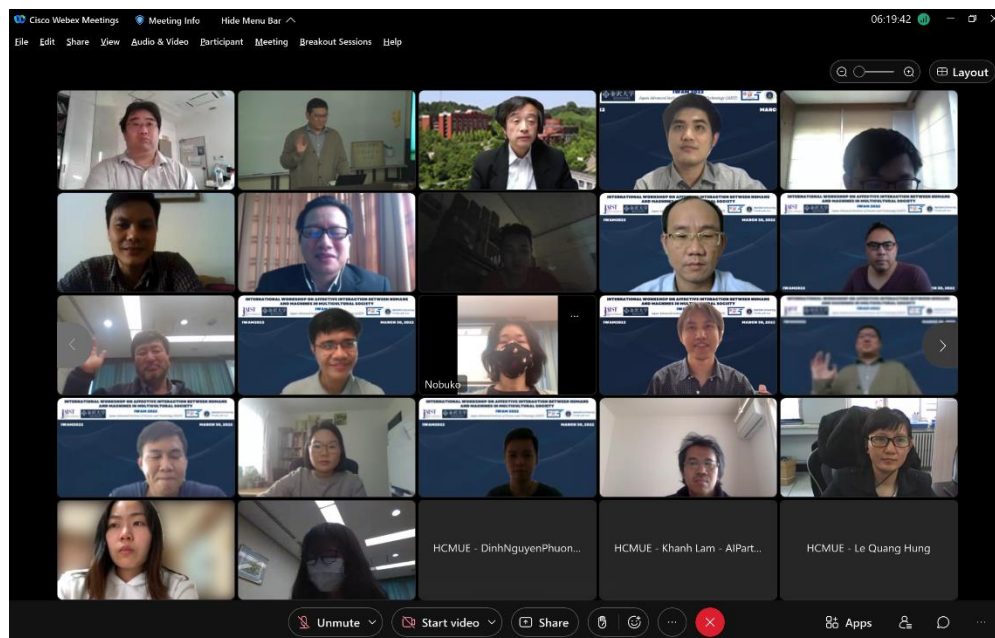
Comparison of pre- and post- engagement

- Improved: Increased transition probability
- Unimproved: Decreased transition probability
- These probability are equally distributed to other states
- Sum of probability changes are 1
- Fitting individual differences

Invited Talk #4: An Adaptive Engagement Support Robot Based on Behavior Update Model and Engagement Estimation, Shinobu Hasegawa, JAIST, Japan



Closing Remark by Dr. Nguyen Viet Hung, Dean of Faculty of Information Technologies, Ho Chi Minh City University of Education, Vietnam



Group photo in the closing session

Closing Remark by Prof. Nguyen Viet Hung,

Dean of Faculty of Information Technologies, Ho Chi Minh City University of Education, Vietnam

On behalf of HCMUE and Organizer, I would like to express my deep thanks to Prof. Hiroyuki Iida, Prof. Jackrit Suthakorn, Prof ngoc Bui and Prof Vinh Pham for their welcome speed; thanks to speakers for their interesting talks, thanks to Prof Kotani and Prof Pop and his team for great effort to organize this workshop.

As you know, one of the biggest efforts of human being is trying to understand the human.

Understanding human emotion is one of steps to understand human. There is such tremendous research in many fields focused on this problem. However, there is no good answer or solution given. Understanding human emotion also play a key role to improve the human-robot interaction.

Besides that, following Darwin and Ekman, there are seven universal facial expressions of emotions. However, following some research of neuroscience, there is no common facial expression among different cultural. It is still big controversy.

To figure out the problem, to understand the emotion across different culture, to establish a unified

human-machine interaction framework to understand the emotional expressions of people from

different cultural backgrounds, the experts in ML, AI, CV, NLP, Acoustic Processing, educator, psychology and so on from JP, Thailand and Vietnam will gather, collect data, annotate data, analysis data and build the model and so one.

This workshop is first step of giant walk. I hope after workshop, the researchers from JAIST, KU, MU, HMCUE are going to do next step and obtain good results.

Once again, thanks so much for your attention.

Hung Viet Nguyen

Dean of Faculty of Information Technologies

Ho Chi Minh City University of Education, Vietnam