Xia Qingxin

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Education

2021.10-Current: **Osaka University – Osaka, Japan (QS2023 68)**
Specially Appointed Assistant Professor *in Hara Lab (Pre. Prof. Shojiro Nishio, President of Osaka Univ.)*
Research topics:1) Human Activity Recognition via Wearables for Healthcare and Industrial Domains
2) Next Point-of-Interest Recommender System.
2018.9 –2021.9: **Osaka University – Osaka, Japan (QS2023 68)**
Ph.D. Student in Information Science and Technology, mentor: Prof. Dr. Takuya Maekawa
Research topics:1) Factory Activity Recognition with Wearable Sensors,
2) Auto-knowledge Extraction from Skillful Workers via Attention Structure.
(My thesis has been recommended by institution of ***Information Processing Society of Japan***)
2015.9 – 2018.6: **Ocean University of China – Qingdao, China (985/211)**
Graduate Student in Computer Technology, mentor: Prof. Dr. Feng Hong
Research topic: Handwriting Recognition on Paper via Smartwatch, User Authentication via Smart Devices (***Excellent graduated student award***).
2011.9 – 2015.6: **Ocean University of China – Qingdao, China (985/211**)
Postgraduate Student in Computer Science and Technology, mentor: Prof. Dr. Feng Hong.
Thesis topic: A Motion Sensors Based Dancing Machine with Android Smartphone (***Top 10% thesis***).

Research Interests

- Wearable/Ubiquitous Sensing, Human Activity Recognition

Publications

[1] Qingxin Xia, Atsushi Wada, Joseph Korpela, Takuya Maekawa, and Yasuo Namioka. 2019. Unsupervised Factory Activity Recognition with Wearable Sensors Using Process Instruction Information. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**), Vol. 3, Issue 2, No. 60 (June 2019).
[2] Qingxin Xia, Joseph Korpela, Yasuo Namioka, and Takuya Maekawa. 2020. Robust Unsupervised Factory Activity Recognition with Body-worn Accelerometer Using Temporal Structure of Multiple Sensor Data Motifs. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**), Vol. 4, Issue 3, No. 97 (Sep 2020).
[3] Qingxin Xia, Atsushi Wada, Takanori Yoshii, Yasuo Namioka, Takuya Maekawa: Attention-based Neural Network for Comparative Analysis of High- and Low-performers in Industrial Domain, Journal of **Monet**, 2022. (To appear)
[4] Qingxin Xia, Takahiro Hara, and Takuya Maekawa: Location Representations for Accelerating

the Training of Next POI Recommender System. In Proceedings of the 2022 ACM International Symposium on Wearable Computers (**ISWC** Poster 2022). (To appear)

[5] Qingxin Xia, Takahiro Hara, Takuya Maekawa, Kei Yonekawa, and Mori Kurokawa: An Effective and Efficient Self-Attention Based Model for Next POI Recommendation, Proc. of IEEE Int'l Conf. on Pervasive Computing and Communications (**PerCom** Workshop 2023). (To appear)

[6] Jaime Morales, Naoya Yoshimura, Qingxin Xia, Atsushi Wada, Yasuo Namioka, Takuya Maekawa: Acceleration-based Human Activity Recognition of Packaging Tasks Using Motif-guided Attention Networks, Proc. of IEEE Int'l Conf. on Pervasive Computing and Communications (**PerCom** 2022), pp. 1-12 (Mar. 2022).

[7] Qingxin Xia, and Takuya Maekawa: Self-supervised Learning for Complex Work Activity Recognition in Industrial Domains through Motif Identification Learning. (Submitted to **IMWUT**)

Research Experience

- **Active Senior Development Project by IoT, cooperating with Kyushu Institute of Technology and a healthcare institution – sponsored by Japan Science and Technology Agency (2021 – Current)**

  In an aging society, the number of nursing care facilities is increasing, with an increasing demand for caregiver human resources. This project aims to improve the efficiency and accuracy of the caregivers' handwriting recordings. We collect the caregivers' sensor data by using their mobile phones in an actual healthcare center and designed algorithms to recognize activities as well as correct their labels. One preliminary work has been published at a domestic conference, and I'm improving this work to publish it to IMWUT.

- **Sensor Data Processing Methods for Recognizing and Understanding Factory Work Activities, cooperating with Toshiba Cooperation institution – international business enterprise (2018 – Current)**

  In actual industrial settings, recognizing workers' activities and understanding their skills of works are of great importance. As for the works in the assembly and logistics domains, we designed different methods to recognize the workers' activities according to the acceleration data collected from the smartwatch worn on the workers' wrists. I published 2 papers on IMWUT for two consecutive years and 1 paper on PerCom. In Feb, 2023, I submitted a new paper to IMWUT.

- **AI Marketing that Connects Different Types of Services, CREST Project – most influential research institution in Japan (2021 – 2022)**

  This project aims to improve recommendation performance for different marketing data. My work is to design a POI representation algorithm to achieve a better POI recommendation performance.

Honors & Awards

- Qingxin Xia: 情報処理学会 **山下記念研究賞**, (2022 年度). (Only **54** researchers in computer science received this award in Japan, 2022)
- Qingxin Xia, Atsushi Wada, Takanori Yoshii, Yasuo Namioka, Takuya Maekawa : A Supporting Technique for Comparative Analysis of Factory Work by Skilled and Unskilled Workers using Neural Network with Attention Mechanism, 情報処理学会 マルチメディア, 分散, 協調とモ

バイル(DICOMO2021)シンポジウム論文集, pp. 1133-1140 (June 2021). [**優秀発表賞**][**優秀論文賞**]

- Qingxin Xia, Atsushi Wada, Joseph Korpela, Takuya Maekawa, and Yasuo Namioka: Preliminary Investigation of Assembly Work Activity Recognition with Wearable Sensors via Unsupervised Learning, 情報処理学会 マルチメディア, 分散, 協調とモバイル(DICOMO2019)シンポジウム論文集, 2019(1) NO.6E－1 (June 2019). [**国際会議発表奨励賞**] [**優秀論文賞**]
- Qingxin Xia, Joseph Korpela, Yasuo Namioka, and Takuya Maekawa: Preliminary Investigation of Unsupervised Factory Activity Recognition with Wearable Sensors via Temporal Structure of Multiple Motifs, 情報処理学会 マルチメディア, 分散, 協調とモバイル(DICOMO2020)シンポジウム論文集, 2020(1) NO.3B-4 (June 2020). [**優秀発表賞**] [**優秀論文賞**] [**国際会議発表奨励賞**]
- Qingxin Xia, Korpela Joseph, 前川 卓也, 和田 篤, 浪岡 保男: Preliminary Investigation of an Accelerated Algorithm for Unsupervised Assembly-work Activity Recognition with Acceleration Sensors, 電気学会研究会資料 情報システム研究会, IS-24, pp. 61-67 (May 2019). [電気学会 2019 年 電子・情報・システム部門　**技術委員会奨励賞**]