Introduction about myself

Wenwen Zhang

Keywords: Creative, passionate, leadership

Research interests: Machine learning, computer version, clinician application, bio-information and biomedical engineering.

For PhD application

Bio

Wenwen Zhang received her B.Sc. degree from Tianjin University, Tianjin, China, in 2020. She will receive her master degree (research based) at the University of British Columbia, Vancouver, Canada. She is interested in machine learning based methods, biomedical data process, and quantum computing. From January 2016 to March 2020, she was with Tianjin University, where she was involved with microwave engineering with machine learning (dual-band bandpass filter applied for 5G sub-6 GHz base station). From September 2020, her research focuses on machine learning based wearable sensor data process and biomedical information process(Supervised by Dr. Peyman Servati and Dr. Calvin Kuo). From Sept 2022 to April 2023, she is a visiting student (supervised by Dr. Grigory Tikhomirov) at the University of California, Berkeley. She is working on label-free DNA microscopy imaging by using machine learning.

- **09/2020-12/2022 MAS.c Electrical & Computer Engineering, University of British Columbia (UBC)**
  - Research student at flexible electronics and energy lab.
- **09/2022-04/2023 Visiting Graduate Researcher, University of California, Berkeley(UCB)**
  - Visiting research student (Friedman Scholar)
- **08/2016-06/2020 B.S.c Electrical & Computer Engineering, Tianjin University (TJU)**
  - Sub area: Electric and information science
  - Overall GPA: 3.89/4.0

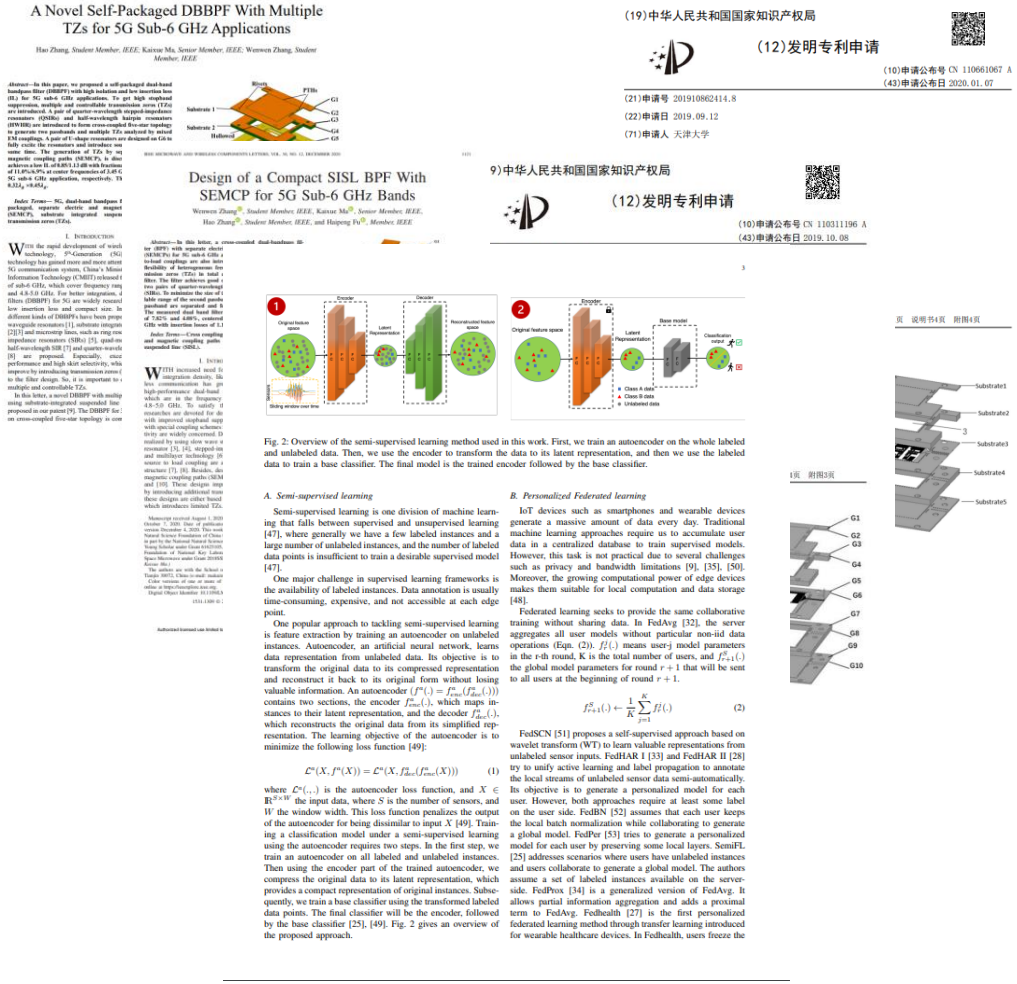
Berkeley
UNIVERSITY OF CALIFORNIA

UBC THE UNIVERSITY OF BRITISH COLUMBIA

天津大学
Tianjin University

Publications and Patents

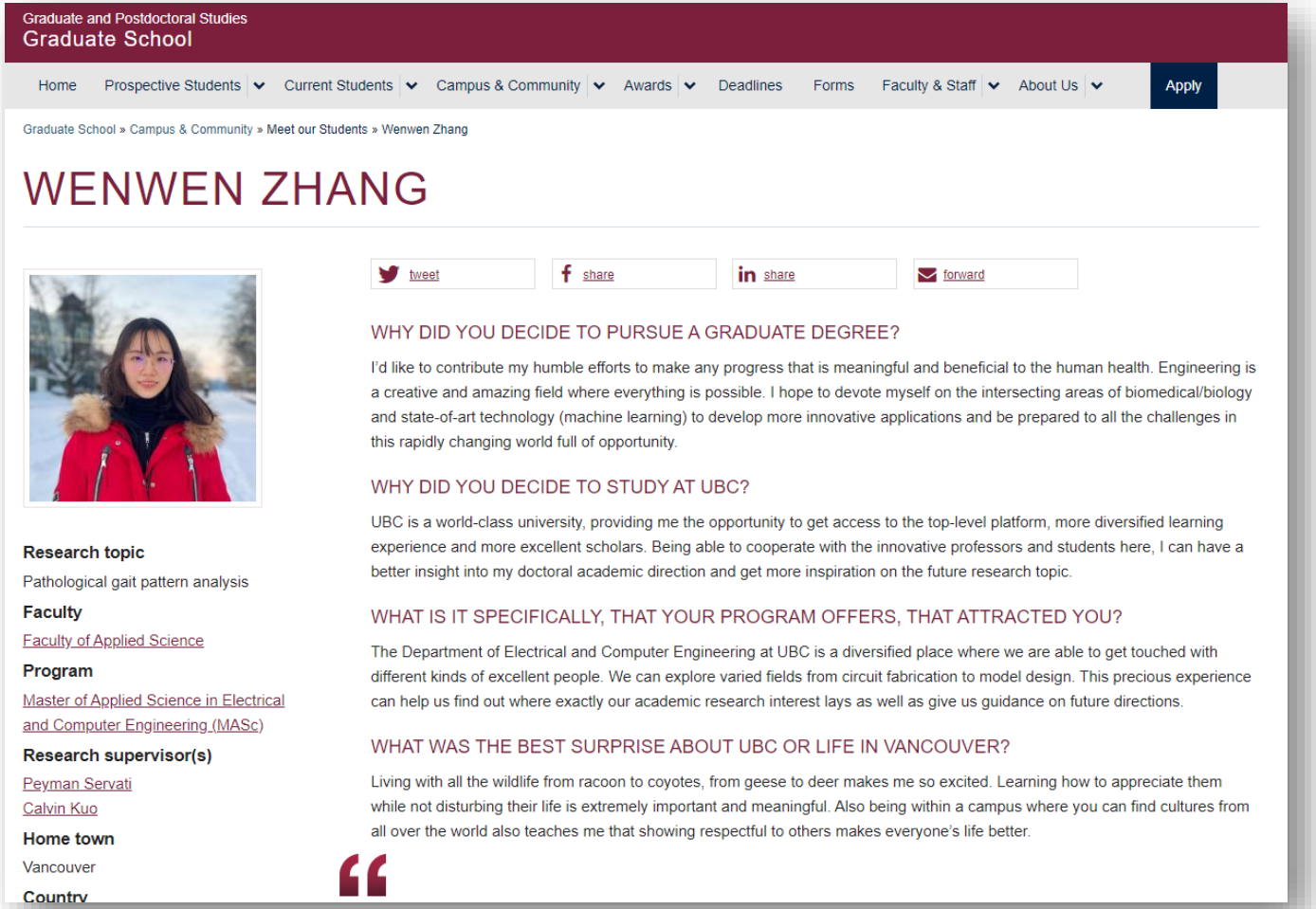
- A. Tashakori, **W. Zhang**, Z. J. Wang and P. Servati, **"SemiPFL: Personalized Semi-Supervised Federated Learning Framework for Edge Intelligence,"** in *IEEE Internet of Things Journal*, doi: 10.1109/JIOT.2022.3233599.
- **Zhang W**, Ma K*, Zhang H, et al. **Design of a compact SISL BPF with SEMCP for 5G Sub-6 GHz bands**[J]. *IEEE Microwave and Wreless Components Letters*, 2020, 30(12): 1121-1124.
- Zhang H, Ma K, **Zhang W**, et al. **A Nover Self-packaged DBBPF with multiple TZs for 5G sub-6GHz applications**. *Microw Opt Technol Lett*. 2022, 0895-2477, doi: 10.1002/mop.33455.
- **W Zhang*,** Arvin Tashakori, Zenan Jiang, Amir Servati, Calvin Kuo, and Peyman Servati. **A Flexible Sensor System for Lower Body Locomotion Estimation.** *IEEE Transactions on Biomedical Engineering* (in progress).
- **W Zhang*,** C Kuo and P Servati. **A Wearable Sensor System for Measuring Pathological Gait Parameters**. *IEEE Transactions on Biomedical Engineering* (in progress)
- Ma K, Zhang H, Fu H, **Zhang W**. **5G dual passband filter based on dielectric integrated suspension line**. CN 201910528184.
- Ma K, **Zhang W**, Fu H, Zhang H. **Band-pass filter based on 5G double-frequency dielectric integrated suspension lines**. CN 201910862414.



Conferences and Presentations

- **W Zhang***, Arvin Tashakori, Zenan Jiang, Amir Servati, Calvin Kuo, and Peyman Servati, A Flexible Sensor System for Lower Body Locomotion Estimation. *Poster - 2022 Biomedical Engineering Society Annual Meeting*. (Link).

- **W Zhang***, C Kuo and P Servati, A Wearable Sensor System for Measuring Pathological Gait Parameters. *Poster - 2022 Biomedical Engineering Society Annual Meeting*. (Link).



UBC Friedman Award for Scholars in Health

Working Experience

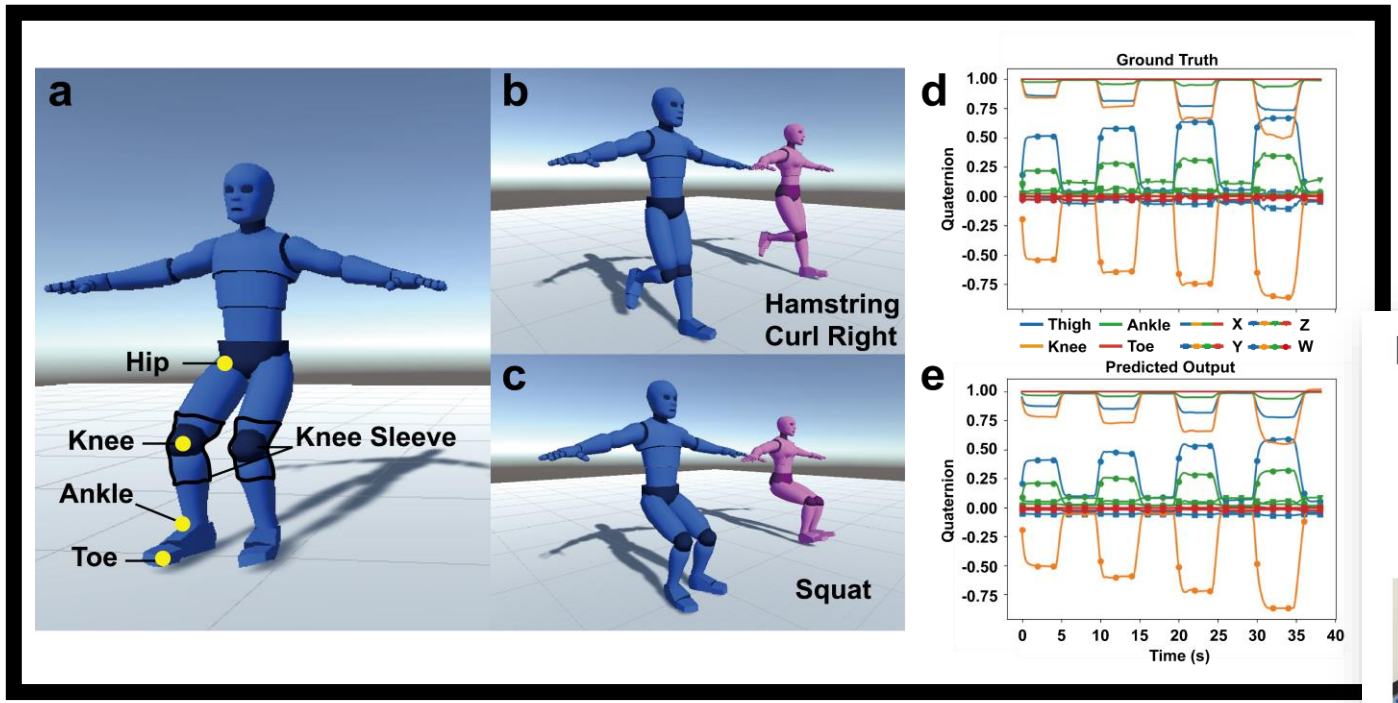
Texavie Technologies, Inc. - R&D Intern, Hardware and Data Processing (12/2021-06/2022)

- **Smart Knee Sleeves Based on Flexible Sensors 12/2021-06/2022**
  - **- Lower extremity estimation & movement tracking & muscle condition monitoring by data from flexible sensors (stress, temperature, ect.) integrated on knee braces.**
- **Intelligent Glove with Embedded Wearable Sensors. 12/2021-03/2022**
  - **- Hand gesture reconstruction of post-stroke patients to assess upper extremity function and help motivate recovery progress.**

texavie

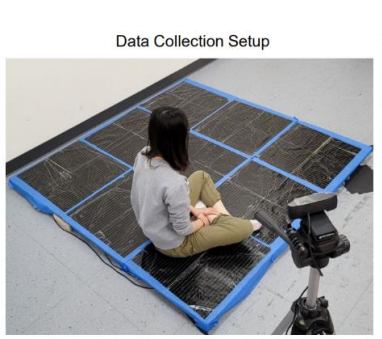
A Flexible Sensor System for Lower Body Locomotion Estimation

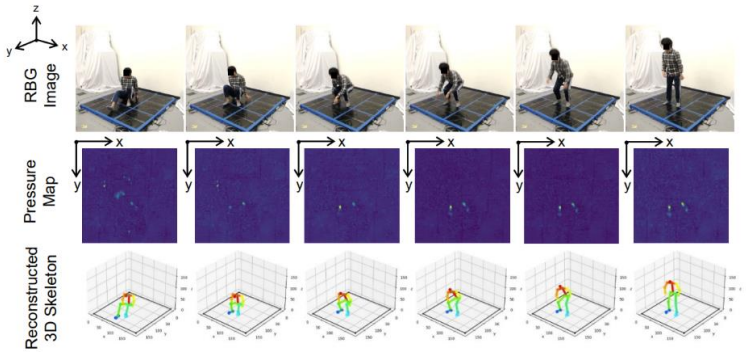
- Knee sleeves with strain sensors around thigh and shank can detect muscle activation during movements. Combined with IMUs located around knee, it's able to estimate lower body locomotion with a pair of knee sleeve only.
- The accuracy on major joints in lower body would be higher than insignificant joints. For example, the toe joints prediction is worse than knee and thigh joint angel estimation.



IntelligentCarpet: Inferring 3D Human Pose from Tactile Signals

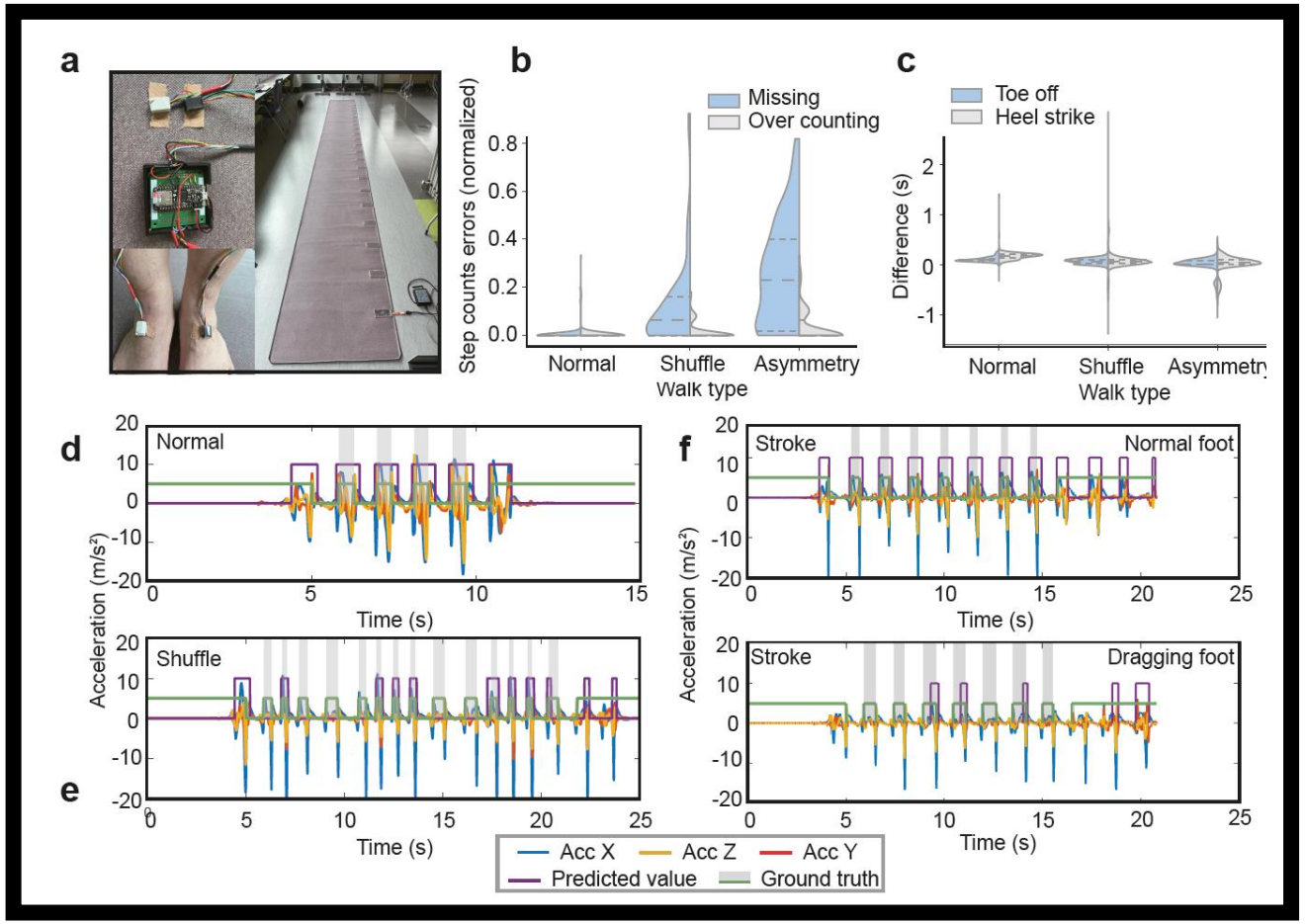
Yiyue Luo Yunzhu Li Michael Foshey Wan Shou Pratyusha Sharma
Tomas Palacios Antonio Torralba Wojciech Matusik





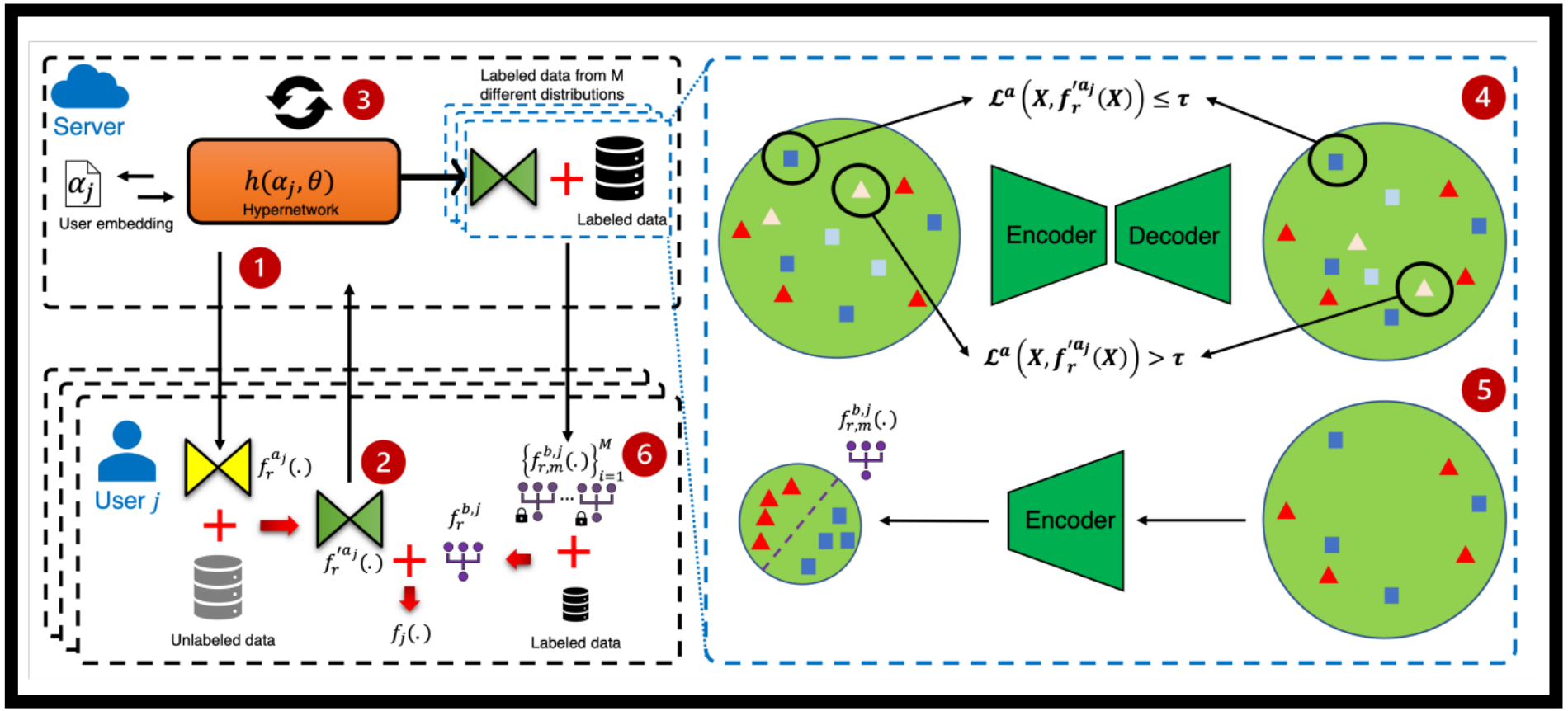
A Wearable Sensor System for Measuring Pathological Gait Parameters.

- Gait parameters such as step length and step time are important indicators to monitor patient progress.
- The prediction accuracy is largely dependent on the first step segmentation results. Missed steps or over counted steps will heavily mess up integration results in downstream tasks. Even foot segmentation is correct, because of the lacking in magnetometer, it's still hard to get accurate result for step length. Due to patients' gaits have different characteristics, it's also hard for traditional ways to set velocity threshold in estimations process, which will lower accuracy as well.



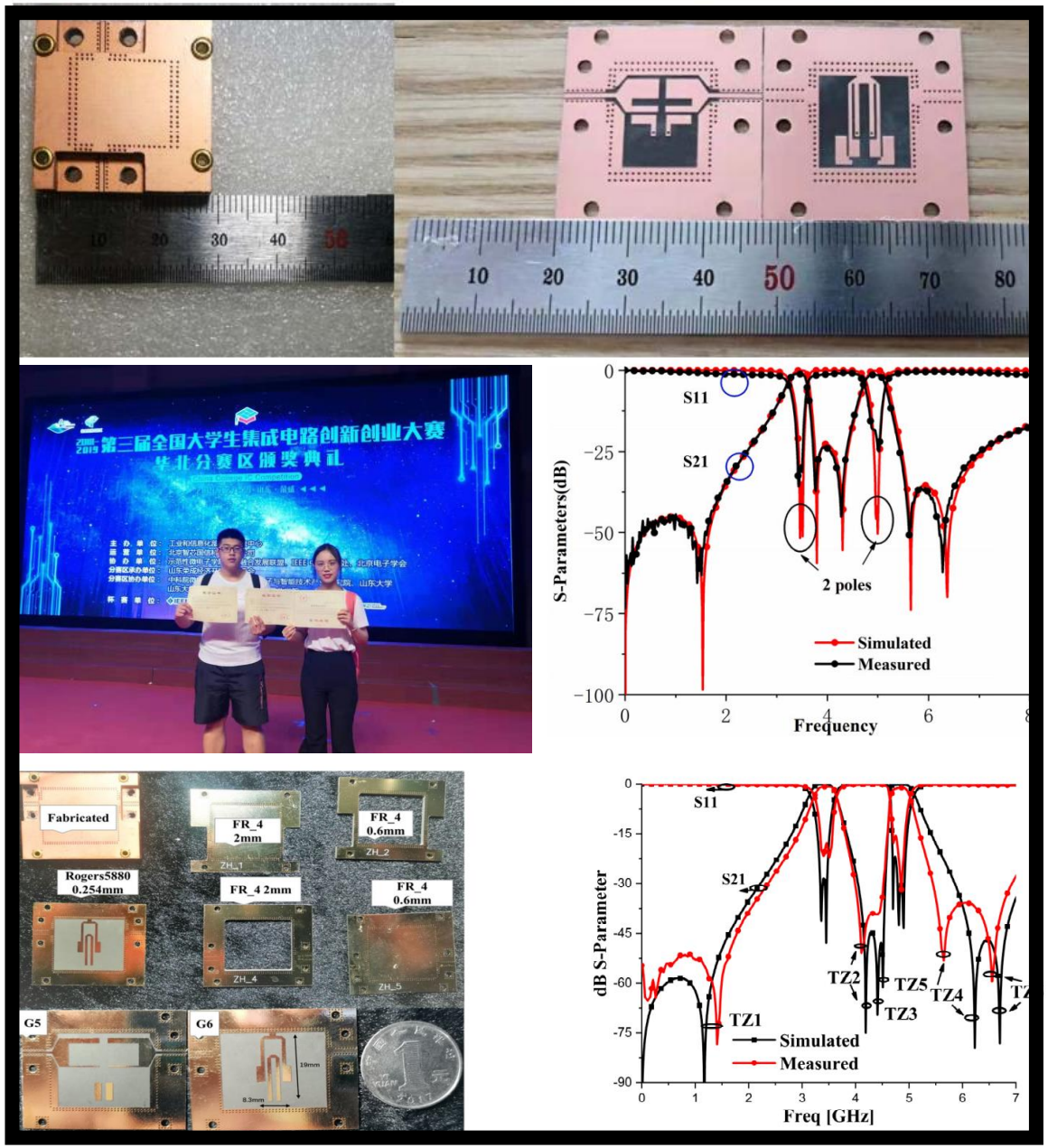
SemiPFL: Personalized Semi-Supervised Federated Learning Framework for Edge Intelligence

- With the evolution of sensor and wearable technologies, tremendous data from numerous clients have contributed to various datasets with huge heterogenous. To take advantage of those unlabeled data, semi supervised is proposed for this special situation.
- High quality dataset with elaborate labels are usually confined to a small portion of the whole data. To make accurate estimations for unlabelled data, we initialize a hyper network at the central server, and keep updating network parameters while sending personalized encoder to different client during each iteration.



09/2018- 05/2020 Interconnection Perception Microelectronics Laboratory of Tianjin University
Research Assistant Supervisor: Prof. Kaixue Ma (Dean at the school of Microelectronics)

- Undertaking an Innovative Project for College Students in the Laboratory (**the Excellent USRP in Province, 1%**). The project aimed to design a Self-Packaged dual bandpass filter with multiple transmission zeros for 5G sub-6 GHz applications. I proposed a novel **coupling topology** (**optimized by using machine learning**) for designing a dual-band bandpass filter with multiple and controllable transmission zeros TZs. In this USRP, two types of dual bandpass filters are designed, fabricated, and tested. The project has been published two paper in Wiley and IEEE (SCI JCR Q2).
- Designed a dual-band board-level antenna with machine learning for 5G sub 6 GHz applications.



Awards

- UBC Friedman Award for Scholars in Health (My page)
- UBC International Tuition Award
- UBC Research Assistance Graduate Award
- China College Students Integrated Circuit Competition (the north region), (Top 1 of 140)
- China College Students Integrated Circuit Competition (Final), Second Prize (1%)
- USRP Excellent Project Award of Province (Top 1% in Engineering department)
- First Prize in China Mathematical Contest in Modeling (5% - Tianjin area).
- “Merit Student” Scholarship of Tianjin University
- Career Certification of HCNA Huawei
- “Mathematical Contest in Modeling Certificate of Achievement (MCM)”, Honorable Mention

Certificates and Workshops

- 2021 SIEPIC Active Silicon Photonics
- The SmarT Innovations for Technology Connected Health (STITCH)
- QSciTech-QuantumBC Virtual Workshop: Gate-based Quantum Computing Using IBM-Q
- 2020 SIEPIC Passive Silicon Photonics
- 2019/2020 International Workshop on Microwave and Microsystems

Academic Society

- Student Member of IEEE, Optica, BME society, etc.
- Student Member in IEEE WIE (Women in Engineering).
- Respect and support every group (man, women, racialized minorities, disabled, Indigenous, LGBTQ2+, etc.,)

Skills

- Operation System: MS Windows, Linux OS, MAC OS
- Software: MS Office, MATLAB, Git, Unity
- Tool Language: Python, Swift, PHP, C/C++/C#, LaTeX (Overleaf)

Hobbies

Marathon,skiing, hiking, camping, astronomical observation, badminton, basketball,.

Github

https://github.com/Zhang-Wenwen

Why I want to pursue a PhD degree