Fei Wang

Curriculum Vitae

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EDUCATION

2016.3 - present **Xi'an Jiaotong University**, Xi'an Shaanxi 710049, China
PhD student on Computer Software and Theory

2014.9 - 2016.2 **Xi'an Jiaotong University**, Xi'an Shaanxi 710049, China
Mater of Engineering on Computer Architecture

2009.9 - 2013.7 **Xi'an Jiaotong University**, Xi'an Shaanxi 710049, China
Bachelor of Engineering on Computer Science and Technology

EXPERIENCE

2017.10 - present **Carnegie Mellon University**, Pittsburgh PA 15213, USA
Visiting scholar at The Robotics Institute,CMU

RESEARCH INTERESTS

Computer vision and deep learning

I have experiences and interests in abundant computer vision tasks, e.g. image classification, person pose estimation, action recognition, object detection and segmentation, etc.

Machine learning

I am passionate on topics that target to make knowledge wide and learning easy, e.g. GANs for domain adaption, knowledge distillation, transfer learning and zero-shot learning, AutoML, etc.

Systems, sensors, and sensing

I have lots of experiences in building sensory systems, single or multi-modality, designing advanced DL/ML algorithms, and conducting object (person) behavior understanding.

PUBLICATIONS

Computer Vision

[13] Person-in-WiFi: Fine-grained Person Perception using WiFi
Fei Wang, Sanping Zhou, Stanislav Panev, Jinsong Han, and Dong Huang
IEEE/CVF ICCV 2019

[12] Discriminative Feature Learning with Consistent Attention Regularization for Person Re-ID
Sanping Zhou, **Fei Wang**, Zeyi Huang, and Jinjun Wang
IEEE/CVF ICCV 2019

[11] Can WiFi Estimate Person Pose?
Fei Wang, Stanislav Panev, Ziyi Dai, Jinsong Han, and Dong Huang
arxiv code 2019

[10] SE2Net: Siamese Edge-Enhancement Network for Salient Object Detection
Sanping Zhou, Jinjun Wang, **Fei Wang**, and Dong Huang
arxiv 2019

Systems, Sensors, and Sensing

[9] Continuous User Authentication by Contactless Wireless Sensing
Fei Wang, Zhenjiang Li, and Jinsong Han
IEEE Internet of Things Journal, 2019 (IF:9.515, JCR:Q1)

[8] Joint Activity Recognition and Indoor Localization with WiFi Fingerprints
Fei Wang, Jianwei Feng, Yinliang Zhao, Xiaobin Zhang, Shiyuan Zhang, and Jinsong Han
IEEE Access, 2019 (IF:4.098, JCR:Q2)

[7] Multi-scale Kernel based Residual Convolutional Neural Network for Motor Fault Diagnosis Under Nonstationary Conditions
Ruonan Liu, Boyuan Yang, S. Joe Qin, and **Fei Wang**
IEEE Transactions on Industrial Informatics, 2019 (IF:7.377, JCR:Q1)

[6] Temporal Unet: Sample Level Human Action Recognition using WiFi
Fei Wang, Yunpeng Song, Jimuyang Zhang, Jinsong Han, and Dong Huang
arxiv code 2019

[5] CSI-Net: Unified Human Body Characterization and Pose Recognition
Fei Wang, Jinsong Han, Shiyuan Zhang, Xu He, and Dong Huang
arxiv code 2018

[4] Motor Fault Diagnosis Under Non-stationary Conditions Using Cascade Convolutional Network
Ruonan Liu, Boyuan Yang, Xuefeng Chen, and **Fei Wang**
code 2019 (under review)

Computer Networks

[3] WiPIN: Operation-free Person Identification using WiFi Signals
Fei Wang, Jinsong Han, Feng Lin, and Kui Ren
IEEE GLOBECOM 2019 (Oral)

[2] Abstract: Security in Uplink MU-MIMO Networks}
Fei Wang, Wei Xi, Jinsong Han, Kun Zhao, and Yuan Gao
ACM/IEEE IoTDI, 2017 (Poster)

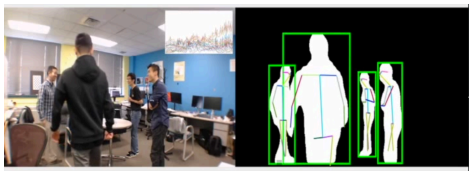
[1] QUICK: Pursuing Qualified CSI for MU-MIMO Networks
Wei Xi, Jinsong Han, **Fei Wang**, Xin Li, and Chen Qian
ACM HotMobile, 2017 (Poster)

PATENTS

2019 System and methods for WiFi-based fine-grained multi-person perception
Fei Wang, Jinsong Han, and Dong Huang
CN patent (In progress)

System and methods for WiFi-based single person pose estimation
Han Ding, Ziyi Dai, Xu He, **Fei Wang**, Jinsong Han, and Dong Huang
CN patent, 201910457667.7

INVOLVED PROJECTS



WiFi Perception: compared with cameras, wifi signals is irrelevant with illumination, occlusion, etc, which servers as a future approach for non-visible vision. In this project, we build a wifi system that does pose estimation and imaging in fine-grained. I undertook every details of the whole projects, including the system build, data collection and cleaning, algorithm design, codes and experiment, paper writing, etc. (2018.1-present at CMU)

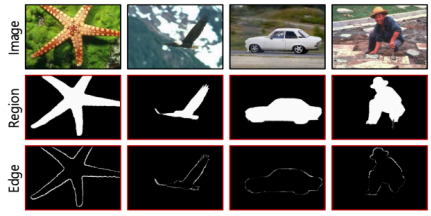


Figure 1. Illustration of some salient object detection examples on the ESSCD dataset [45] by our SE^{2}Net, in which the first to third columns represent the input images, the estimated region maps, and the estimated edge maps, respectively.

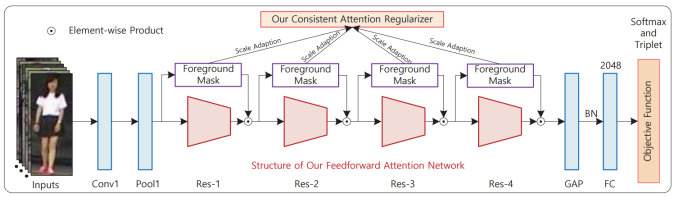
Saliency objection detection: the convolutional operations and the pooling operations decrease the resolution of feature maps, making the edge of objects blur. In this project, we apply the edge from the segmentation to enhance the performance. I participate in the algorithm design, codes, and experiments.

(2018.11-2019.3 at CMU)

Figure 3: One video-based frame-level action recognition example from Kinetics dataset [40]. Each frame of the video is labeled as to one action or the background (the background means no interest-of-action in this frame).

Frame-level action recognition: this task is critical in precise action localization, continuous action segmentation, and real-time action recognition. We use spatial-temporal CNNs for this. I undertake algorithm design, codes and experiments, and paper writing.

(2019.3-2019.5 at CMU)



Person Re-ID: We design a network that merges the low-level and high-level of the person for re-identification. I participate in the algorithm design, codes, and experiments.

(2018.9-2019.3 at CMU)

Detecting people in the farms and orchards: this task is important at self-driving or self-harvesting for the safety. I participate in the basic algorithm implementation and demo preparation.

(2018.2-2018.3 at CMU)

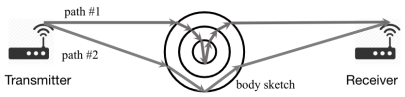
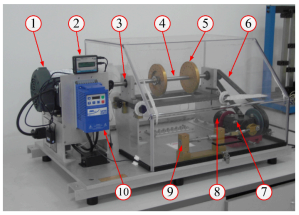


Fig. 1. Wireless signals model at the presence of human body. **Left:** A cross-slice image of a female body [Ackerman and Banvard 2000], where circled layers are the skin, fat, muscle, viscus and bone. **Right:** We simplify human body as a cylinder of three layers with different dielectric properties [Gabriel et al. 1996]. The transmitting signals from the Transmitter interact with human body along multiple propagation paths before reaching the Receiver. Here we sketched two paths of the signals.

WiFi Body Scale: we find wifi variance is related with body component. we use this finding to design a system to do fat rate estimation. I undertook system and algorithm design, codes, and paper writing.

(2018.1-2018.5 at CMU)



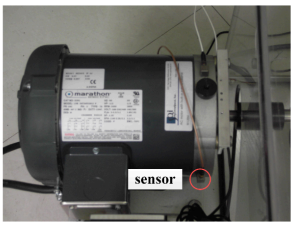


Fig. 6. Experimental setup: (1) induction motor; (2) tachometer; (3) bearing; (4) shaft; (5) load disc; (6) belt; (7) bevel gearbox; (8) magnetic load; (9) reciprocating mechanism; and (10) variable speed controller.

Motor fault diagnosis: We use vibration sensors on the motors, collect the variance of sensors, then conduct the motor fault detection and classification. I undertake algorithm design, codes and experiments.

(2018.12-2019.4 at CMU)

Affective state estimation from wearable sensors: I implement part of proposed algorithms in Matlab.

(2017.10-2017.12 at CMU)

Fig. 6: System deployment. We refit a mini-pc with Intel 5300 NIC and take it as the transmitter. A desktop attached with Intel 5300 NIC works as a computer system embedded with BodyPIN. Subjects are asked to sit before the monitor and to act as their usual behaviors.

WiFi-based Vivo Detection: we build a wifi-based system for vivo detection. I undertook the system design, algorithm design, codes, and paper writing.

(2017.2-2017.8 at XJTU)