

# Xian Zhang

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## EDUCATION

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### Harbin Engineering University

Sep 2019 - Mar 2022

Master of Engineering in Software Engineering

Supervisor: Prof. Yiran Shen (edge computing, IoTs, gait recognition)

GPA: 84.81/100 (ranked 20%)

### Nanchang University

Sep 2013 - Jul 2017

Bachelor of Engineering in Software Engineering

GPA: 83.88/100 (ranked 13%)

## PUBLICATIONS

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### 1. Event-Stream Representation for Human Gaits Identification Using Deep Neural Networks

Yanxiang Wang, **Xian Zhang**, Yiran Shen, Bowen Du, Guangrong Zhao, Lizhen Cui, Hongkai Wen

IEEE Transactions on pattern analysis and machine intelligence, TPAMI, 2021

### 2. Event-Based American Sign Language Recognition Using Dynamic Vision Sensor

Yong Wang, **Xian Zhang**, Yanxiang Wang, Hongbin Wang, Chanying Huang, Yiran Shen

International Conference on Wireless Algorithms, Systems, and Applications, WASA, 2021.

### 3. EV-Perturb: A Differential-private Events Perturbation Approach for Classification Task Using Dynamic Vision Sensor

**Xian Zhang**, Yiran Shen, Qing Yang, Hongkai Wen

Association for the Advancement of Artificial Intelligence, AAI (under second round review), 2022.

## RESEARCH EXPERIENCE

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### Event-stream representation for human gaits identification using deep neural networks

May 2020 - Nov 2020

- Publish a large real-world gait recognition dataset recorded by event camera to the community to further facilitate the research on event-based gait recognition.
- To deal with the unique output of event cameras, a converting method is used to group events into frame forms, thus conventional CNN can be adopted on this representation, achieving 87.3% accuracy.
- To better capture spatial temporal information from events, a new 3D-Graph method is proposed to represent events, and graph neural network is applied to learn to feature embedding of graph. The proposed graph based approach outperforms CNN-based counterpart by 7.6%.

### Event-Based American Sign Language Recognition Using Dynamic Vision Sensor

Jan 2021 - Apr 2021

- A dataset of sign language words consisted of 11200 samples using DVS sensor is published.
- In order to further utilize both the spatial and temporal distribution of the events, a new image-like representation of event stream is proposed which consider neighborhood events for frame generating.
- The proposed frame representation achieves a recognition accuracy of 93.25%.

### EV-Perturb: A Differential-private Events Perturbation Approach for Classification Task Using Dynamic Vision Sensor

Apr 2021 - Sep 2021

- Propose an event-stream perturbation mechanism to protect event-streams from reconstruction attacks, which flips polarities of events in a random manner, and the theoretical proof is provided.
- Both the quantitative and qualitative results show that the proposed method can effectively deteriorate the quality of the constructed images from event-streams while comparable accuracy of the classifiers is preserved.

## WORK EXPERIENCE

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**AI Engineer Intern**

- Engaged in developing semantic matching model with knowledge graph and mask self attention, improving the semantic matching accuracy by 2%.
- Responsible for integrating query information processing platform using Python and Flask, including query log searching and synonym mining, template data validation system, which improve the efficiency of data processing.
- Inverted index was used to optimize performance of some query log searching modules.

**HONORS & AWARDS**

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**Postgraduate**

- Nov. 2020 Second Prize Scholarship in Harbin Engineering University
- Nov. 2019 Second Prize Scholarship in Harbin Engineering University

**Undergraduate**

- May. 2016 First Prize in the Challenge Cup Of College
- Sep. 2014 First Prize Scholarship in Nanchang University
- Sep. 2015 First Prize Scholarship in Nanchang University
- Sep. 2014 First Prize, PPT competition in software department

**SKILLS**

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**• BASIC**

MATLAB, Python, Java, SQL

**• INTERMEDIATE**

PyTorch, Scikit-Learn, design patterns, Data Mining, Web Crawler, Website Development (Python).

**• ADVANCED**

Modeling of Machine Learning and Deep Learning, Transformer and Vision Transformer, event stream processing.

**EXTRACURRICULAR ACTIVITIES**

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**Student Union**

Deputy Minister of the Network Department

- Responsible for managing the daily work arrangements and Wechat official account of the department.
- Provided technical support in many campus activities.
- Organized services to help students solve computer software and hardware problems.

**RESEARCH INTEREST**

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- Resource-efficient Deep Learning
- Internet of Things
- Natural Language Understanding
- Event Stream Based Computer Vision

**LANGUAGES**

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- Chinese: Mother tongue
- English: IELTS 6.0 (Listening 6.0, Reading 6.5, Writing 5.5, Speaking 5.5)