

# Jing WU

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## EDUCATION

### Imperial College London (ICL)

London, UK. 10/2021-10/2022

*MSc. Applied Machine Learning*

*GPA: 73(A). Ranking: 5/28*

- **Modules:** Machine Learning, Deep Learning, Probability and stochastic process, Artificial Intelligence, Digital Image Processing, Wavelet, Computer Vision and Pattern Recognition.
- **Laboratory in Applied Machine Learning:** Bi-Manual Controlled Differential Drive Robot.
- **Final Year Project:** Image Segmentation for Lung Cancer: CNN Structure Comparison and Design.

### University of Electronic Science and Technology of China (UESTC)

Chengdu, China. 09/2017-06/2021

*BEng. Electronic Information Engineering*

*GPA: 89.85/100, 3.97/4 (Honored Class) Ranking: 6%*

- **Excellent Final Year Project of School of Information and Communication Engineering:** Rapidly learned new research field, how to use technical, commercial software packages, wrote python code in anaconda environment, wrote the thesis, awarded a mark of 91%.

## RESEARCH / PROJECT EXPERIENCE

### Language-based Tracking

Visiting Researcher. Singapore. 09/2022-Current

*Singapore University of Technology and Design (SUTD)*

*Supervisor: Dr Jun Liu*

- Pytorch, NLP, Tracking, PyQt5
- **Goal:** We aim to propose a new dataset for the language-based tracker, which features the dynamic samples. A toolkit is provided for the construction of the dataset.
- **My work:** I am currently working on developing the toolkit.

### Medical Imaging Segmentation (Individual Project)

MSc Student. London. 03/2022-09/2022

*Image Segmentation for Lung Cancer: CNN Structure Comparison and Design*

*Supervisor: Dr Dai Wei*

- Python-based (TensorFlow, Keras, Jupyter).
- **Goal:** Perform tumour detection and segmentation on medical images (CT), improve the model performance and enhance human interpretability.
- **My work:**
  - Conducted the repos and comparisons of some classical CNN structures in the lung nodule segmentation scenario. (2D U-Net, Attention U-Net, MultiRes U-Net)
  - Explored the vision transformer in the medical imaging case.
  - Proposed a novel network with an encoder-decoder structure with the vision transformer as the encoder and the attention gate + CNN as the decoder.
  - Experimented with some different skip connections.

### Laboratory in Applied Machine Learning (Group Project)

MSc Student. London. 10/2021-03/2022

*Bi-Manual Controlled Differential Drive Robot*

*Supervisor: Dr Adam Spiers, Dr Krystian Mikolajczyk*

- Python-based (Arduino, IMU sensor, Sci-kit Learn, Jupyter, Sequential data processing and training, Pygame, LSTM)
- A hardware with two IMUs to collect sequential gesture data and software including a neural network and interface are built. The software involves two models: a baseline model using a button to control the input and output (no interference, SVM) experimented in the first stage and a real-time detection model without a button (with interference, LSTM).
- **My work:** Arduino and IMUs setting, Interface (Pygame), Data acquisition, Baseline network (SVM) testing, 3D model design and printing.
- **Result Video** <https://www.youtube.com/watch?v=i4Up8qyWKu4>

### Final Year Project (Year 4)

Undergraduate. Chengdu. 10/2020-06/2021

*Probability map based pedestrian skin detection (Individual Project)*

*Supervisor: Dr Chang Shu*

- Python-based (OpenCV, TensorFlow, Numpy, Jupyter, Matplotlib)

- Introduced a new algorithm to perform pedestrian skin detection based on a probability map.
- Based on the skeleton information detected by PAFs network and groundtruth, for train images, standardize the skeleton and compute the mean skeleton of the train images to get the probability skeleton. Then for every test image, inverse maps the normalized probability skeleton and extends it. Multiply with the skin result detected by the colour detection and filter with a threshold to get the result.

*P-Grabcut for Accurate Pedestrian Segmentation (Group Work)*

*Supervisor: Dr Chang Shu*

- Python-based (OpenCV, Numpy, Matplotlib)
- Introduced a new algorithm to perform pedestrian segmentation based on the cascade of PAFs and Grabcut by using the skeleton result of PAFs to construct masks for Grabcut, to get a better segmentation result.
- **My work:** Accomplished the cascade coding of PAFs and Grabcut to cut foreground out in unobstructed images
- Admitted by ICAIP 2021

## **Electronic Lab (Year 3 / Group Project)**

**Undergraduate. Chengdu. 03/2020-06/2020**

*24-point Game based on BP Neural Network*

*Supervisor: Dr Jihong Yan*

- MATLAB based.
- **Result:** A platform where input four poker cards, the system recognizes the number and then computes the result of a 24-point game.
- **My work:** Image preprocessing (Correct the angle of the image, cut the number out using morphology method), wrote the graphic user interface in MATLAB.
- Published on IEEE ICICSP.

## **SUMMER CAMP**

### **National University of Singapore Summer Exchange Program**

**Singapore, 07/2019**

- Studied scientific innovation courses.
- Participated in iSpace Innovations Asia Pacific Pitching Competition.
- Won the Team Best Award.

### **UESTC-MIT SUMMER Program**

**Boston, 07/2018-08/2018**

- Took general lectures about various fields.
- Studied courses in education, scientific technology, and EE; attended various lectures, such as Global Issues, etc.

## **AWARDS**

### **Academic:**

- The Outstanding Graduate Award of Sichuan Province.
- Excellent Student Scholarship of UESTC (Thrice) [12/2020; 12/2019; 12/2018]
- Team Best Award at Innovation and Entrepreneurship Competition held by iSpace Innovations Asia Pacific Pte.Ltd. (IIAP) [07/2019]

### **Sports:**

- 1st Place of Women's Doubles at "Chengdian Cup" Badminton Individual Race of UESTC. [05/2018]
- 4th Place at "Chengdian Cup" Badminton Team Race of UESTC. [05/2018]
- 2nd Place of mixed doubles at "Freshmen Cup" Badminton Individual Race of UESTC [10/2017]
- 3rd Place of Female Triathlon at 50th Track and Field Sports Meeting of UESTC [09/2017]
- 8th Place at Women's 100m Race of the Sports Meeting of UESTC [09/2017]

## **LANGUAGE AND TECHNICAL SKILLS**

- Language: Mandarin (Native), English (Fluent)
- IELTS: 7.0, GRE: 151 + 170 (3.5)
- Programming: MATLAB, Python, Git
- LaTeX
- TensorFlow, Keras, OpenCV, Numpy, Jupyter, Matplotlib, Pytorch