

# Jing WU

Linkedin: <https://www.linkedin.com/in/jing-wu-068b7b1b4/>  
South Kensington Campus,  
Imperial College London, London SW7 2AZ, UK

Email : [jing.wu21@imperial.ac.uk](mailto:jing.wu21@imperial.ac.uk)  
Tel: +44 07536219046  
Github page: <https://maximume-wu.github.io/>

## EDUCATION

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### Imperial College London

10/2021-10/2022

*MSc. in Applied Machine Learning (Distinction)*

London, UK

- **GPA: 3.89/4, 73.44 [A] (UK System), Ranking: 5th**
- **Relevant Coursework:** Machine Learning, Deep Learning, Probability and Stochastic Processes, Artificial Intelligence, Digital Image Processing, Wavelet, Computer Vision, Pattern Recognition.
- **Laboratory in Applied Machine Learning:** Bi-Manual Controlled Differential Drive Robot.
- **Individual Project:** Image Segmentation for Lung Cancer: CNN Structure Comparison and Design.

### University of Electronic Science and Technology of China

09/2017-06/2021

*BEng. in Electronic Information Engineering*

Chengdu, China

- **Major GPA: 90.73/100, Overall GPA: 89.85/100, 3.97/4.0, Ranking: Top 6% (Honorable Class)**
- **Excellent Final Year Project of School of Information and Communication Engineering:** Rapidly learned a new research field and how to use technical commercial software packages, wrote Python code in anaconda environment, wrote the thesis, earned a mark of 91%.
- **Honors:**
  - The Outstanding Graduate Award of Sichuan Province. [**Provincial Level**]
  - 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]

## RESEARCH / PROJECT EXPERIENCE

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### Language-based Tracking Scene Graph Generation

09/2022-Current

**Research Assistant** | Supervisor: Dr. Liu Jun, Professor of ISTD, SUTD

Singapore

- PyTorch, Linux, HTML, CSS
- **Goal:** To propose a new Language-initialized Interaction Tracking task (LIT), along with VLOG, i.e. the first large-scale, comprehensive, yet challenging benchmark dataset that comprises annotations of language descriptions, trajectories (bounding boxes of target over time), and interactions of the target-of-interest (ToI) with its surrounding objects to track and analyze the interactions of a ToI in a scene.
- **My work:**
  - Dataset processing. (Including dataset toolkit development, data preprocessing and annotation, and management, statistics, visualization)
  - Part of the model implementation.
  - Website Construction
  - Paper Writing

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

03/2022-09/2022

Supervisor: Dr. Dai Wei, Professor of EEE, ICL

London, UK

- TensorFlow, Keras, Jupyter
- **Goal:** To perform tumor detection and segmentation on medical images (CT), improve model performance, and enhance human interpretability.
- **My work:**
  - Conducted repos and comparisons of classical CNN structures (2D U-Net, Attention U-Net, MultiRes U-Net) in a lung nodule segmentation scenario.
  - 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 various skip connections.

**Bi-Manual Controlled Differential Drive Robot****10/2021-03/2022****Research Assistant** | Supervisor: Dr. Adam Spiers, Dr. Krystian Mikolajczyk, Professor of EEE, ICL London. UK

- Arduino, IMU sensor, Sci-kit Learn, Jupyter, Sequential data processing and training, Pygame, LSTM
- Built a piece of hardware with two IMUs to collect sequential gesture data and software, including a neural network and interface. The software includes two models: a baseline model using a button to control input and output (no interference, SVM) experiments in the first stage, and a real-time detection model without a button (with interference, LSTM).
- **My work:** Arduino and IMUs, 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: Probability Map Based Pedestrian Skin Detection****10/2020-06/2021**

Dr. Chang Shu, Professor of ICE, UESTC

Chengdu, China

- Python, OpenCV, TensorFlow, NumPy, Jupyter, Matplotlib
- Introduced a new algorithm to perform pedestrian skin detection based on a probability map.
- Used skeletal information detected by PAFs network and groundtruth to train images, standardize the skeleton, and compute the mean skeleton of the train images to obtain a probability skeleton. Then for every test image, inverse mapped the normalized probability skeleton and extended it. Multiplied with the skin result detected by the colour detection and filter with a threshold to get the result.

**P-Grabcut for Accurate Pedestrian Segmentation****10/2020-06/2021****Research Assistant** | Supervisor: Dr. Chang Shu, Professor of ICE, UESTC

Chengdu, China

- OpenCV, NumPy, Matplotlib, Python
- Introduced a novel algorithm to perform pedestrian segmentation based on the cascade of PAFs and Grabcut; used the resulting skeleton to construct masks for Grabcut in order to improve segmentation.
- **My work:** Completed the cascade coding of PAFs and Grabcut to cut the foreground of the images out.
- Admitted by ICAIP 2021

**Electronic Lab: 24-point Game based on BP Neural Network****03/2020-06/2020**

Supervisor: Dr Jihong Yan, Professor of ICE, UESTC

Chengdu. China

- MATLAB
- **Result:** Developed a platform that takes four poker cards as input, recognizes the number and computes the result of the 24-point game.
- **My work:** Image preprocessing (correcting image angles, removing the number using the morphology method), wrote the graphic user interface in MATLAB.
- Published on IEEE ICICSP.

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**ACTIVITY****National University of Singapore Summer Exchange Program****Singapore, 07/2019**

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

**UESTC-MIT SUMMER Program****Boston, US. 07/2018-08/2018**

- Attended general lectures covering various fields.
- Took courses in education, scientific technology, and EE; attended various lectures, including "Global Issues."

**Sports Awards:**

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

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**LANGUAGE AND TECHNICAL SKILLS**

- Language: Mandarin (Native), English (Fluent)
- IELTS: 7.5 (S:7, W:7, R:7.5, L:8), GRE: 151 + 170 (3.5)
- Competent in MATLAB, LaTeX, Git, HTML, CSS
- Python: Proficiency in TensorFlow, Keras, OpenCV, Numpy, Jupyter, Matplotlib