Haozhe Tian

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Personal Website: [Link]
Current Interests: Deep Reinforcement Learning | Planning | Model Predictive Control

EDUCATION

- **Imperial College London** — London, UK
  PhD ongoing — *Sep 2023 - Sep 2027*
  Department: Dyson School of Design Engineering

- **Imperial College London** — London, UK
  MSc in Communications and Signal Processing   Distinction — *Sep 2021 - Nov 2022*
  Department: Electrical and Electronic Engineering

  The Ivor Tupper Prize For Excellence in Signal Processing, Broadcast And Video Technology

- **Beihang University** — Beijing, China
  BEng   GPA: 3.844/4.0 — *Sep 2017 - Jun 2021*
  Specialization: Pattern Recognition | Department: Automation and Electrical Engineering

  China National Scholarship (0.2%) | Twice Outstanding Student List (5%) | Outstanding Graduate (10%)

Tian H, Hu H, Ye Q. In2023 IEEE International Conference on Big Data (BigData) 2023 Dec 15 (pp. 554-561). IEEE.

PUBLICATIONS

- **CGP: Centroid-guided Graph Poisoning for Link Inference Attacks in Graph Neural Networks**: Tian H, Hu H, Ye Q, in 2023 IEEE International Conference on Big Data (BigData) 2023 Dec 15 (pp. 554-561). IEEE.

- **Hearables: Heart Rate Variability from Ear Electrocardiogram and Ear Photoplethysmogram (Ear-ECG and Ear-PPG)**: Tian H, Occhipinti E, Nassibi A, Mandic DP, in 2023 45th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) 2023 Jul 24 (pp. 1-5). IEEE.

- **Instrumentation of Surface Plasmon Microscopy: Complete Scheme of Signal Extractions**: , B. Zhang, H. Tian, T. Xiao and J. Zhang, in IEEE Transactions on Instrumentation and Measurement, vol. 70, pp. 1-10, 2021, Art no. 7003710, doi: 10.1109/TIM.2021.3072137.

SKILLS

- **English**:   GRE General (330+4.0) | TOEFL iBT (115)
- **Languages**:   Python | MATLAB | julia | C/C++ | Verilog HDL
- **Frameworks**:   SciPy | Numpy | PyTorch | Scikit-learn | OpenCV | pandas | Matplotlib
- **Others**:   LaTeX | html | CSS

EXPERIENCE

- **Heart Rate Variability from Ear ECG and PPG** — Imperial College London
  Supervisor: Prof. Danilo Mandic — *Jan 2022 - (ongoing)*
  - **Protocol Design**: Designed an interactive recording MATLAB app
  - **Feature Extraction**: Used matched filter and Hilbert transform to identify ECG R-peaks; estimated time- and frequency-domain heart rate variability features; estimated breathing rate and blood oxygen saturation from PPG; estimated blood pressure using pulse arrival time
  - **Classification**: classified physical states using random forest, support vector machine, and naive Bayes classier; compared the significance of different features

- **Epileptic Seizure Detection Based on Graph Neural Network** — Beihang University
  Supervisor: Prof. Yang Li — *Jan 2021 - Jun 2021*
  - **Data Preparation**: Adopted the MIT-CHB data set, analysed the power spectrum density, identified key frequencies, and performed noise removal
  - **Adjacency Matrix**: Constructed the adjacency matrix using spatial and spectral coherence between EEG channels; the spatial coherence was based on geodesic distance; the spectral coherence was based on normalized cross spectral density
  - **Graph Neural Network**: train, validate, and tested the performance of fully connected neural network, shallow GCN, and deep GCN. Comparison was carried out based on several metrics

- **Surface Plasmon Microscopy Based on Object Detection Networks** — Beihang University
  Supervisor: Dr. Bei Zhang (in cooperation with Prof. Michael Somekh) — *May 2020 - Apr 2021*
  - **Instrumentation**: Built an Surface Plasmon Microscopy (SPM) system and acquired surface plasmon (SP) profiles
  - **Object Detection Network**: Trained a Faster R-CNN network for classifying polarization mode and localizing SP profiles (the first time deep-learning was applied to back focal plane SPM, to our best knowledge)
  - **Radius Measurements**: Proposed self-correlation for center identification; Gray-scale statistics for the measurement of SP and aperture's radii
  - **Verification**: Applied the complete algorithm to measure the excitation angle of MgO; bench-marked the model against traditional approaches (based on Hough transform or Fourier correlation analysis; compared the performance of several object detection networks (YOLO, SSD, Faster R-CNN)