# OU Jiarui


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## EDUCATION

**University of Electronic Science and Technology of China**
Communication Engineering-Bachelor
**Sep. 2015 - Jun. 2019**

Yingcai Honors college of UESTC (**Postgraduate Recommendation**) (Sep. 2015 – Jun. 2019)
The University of Electro-Communications (Japan) (Exchange Student) (Apr. 2018 – Mar. 2019) (**JASSO scholarship**)
School of Information and Communication Engineering (Sep. 2017 – Jun. 2019)

**Kyoto University (Japan)**
Mathematical Sciences-Master
**Sep. 2019 -**

Research student (Sep. 2019 – Mar. 2021)
Master's student (Apr. 2021 – Mar. 2023)

## RESEARCH EXPERIENCE

### 1. Study and tool development of information extraction from CT scan book volume data

**(Nov. 2019 – Mar. 2020)**

- **Abstract:** This study aimed to extract information from ancient documents using CT scans nondestructively. **In the first stage**, we developed a WebGL-based sampling tool. Then we used the Laplace equation to fit and simulated to extract page information of volume data and made OCR identification and evaluation.
- **Contribution:** Responsible for the overall implementation. Publishing the research as the first author.
- **Thesis:** Jiarui Ou, Zhongjiang Han, and Koji Koyamada. "Three-dimensional book data page segmentation and extraction method using Laplace equation." *Journal of Advanced Simulation in Science and Engineering* 8.2 (2021): 223-236.
- **GitHub:** https://github.com/Lawrence-0/ExtractingPageBySolvingLaplaceEquation

**(May 2019 – Sep. 2020)**

- **Abstract:** **In the second stage**, the physics-informed neural network was used to replace the equation fitting in the first stage to perform more accurate and efficient extraction tasks.
- **Contribution:** Participating in the discussion of the methodology; Realizing the early demonstration experiment; The paper, I am the second author of, has been accepted by the JOV journal.
- **Thesis:** Zhongjiang Han, Jiarui Ou and Koji Koyamada. "High-precision page information extraction from 3D scanned booklets using physics-informed neural network." *Journal of Visualization.* (accepted)
- **GitHub:** https://github.com/Zhongjianghan/PINN

### 2. Analysis of PDE with PINN, and its visualization

**(Apr. 2021 – )**

- **Abstract:** This research is to use the PINN (Physics-Informed Neural Network) to analyze PDEs (Partial Differential Equation), i.e. parametric regression and equation solving, and perform visual analysis.
- **Contribution:** For the PDE solution of multi-type equations, the feasibility of PINN technology was verified, and a visual analysis tool was developed for the influence of equation parameters on the results;
  I participated in the development of a visualization system with parameter regression function;
  Current stage, I am studying on PINN based surrogate models and visual analysis tools.
- **GitHub:** https://github.com/Lawrence-0/PINN-VIZ

## INTERN EXPERIENCE

### Learning data of regional precipitation and river water level with LSTM model, data prediction and its visualization

**(JP-DOT.COM Co., Ltd. Nov. 2020 – Feb. 2021)**

- **Abstract:** The purpose of this research was to use the regional precipitation information and river water level information publicly available in Japan for decades, to learn features through LSTM (Long Short-Term Memory) neural network, and to predict the water level.
- **Contribution:** An automatic analysis and visualization system for precipitation and water level information across Japan was developed based on proven technologies.
- **GitHub:** https://github.com/Lawrence-0/LSTM-WaterLevel

## ABOUT ECONOMICS and FINANCE

I have read some famous economic works such as "*The Wealth of Nations*" and "*Das Kapital*". Interested in international economic and political news, I often watch online programs to gain relevant knowledge. Personally, I subscribe to the electronic newspapers "*The Economist*" and "*Financial Times*" for studying.
In terms of technology, I am proficient in Numpy, Pandas and other basic data processing tools and other visualization tools of Python; I have taken courses about Excel and VBA languages; I have learnt some knowledge about financial tools like the Wind terminal.

## SKILLS

- **Programming Language:** Python(proficient), JavaScript(proficient), MatLab(proficient), Java(beginner), C++(beginner).
- **Practical Skills:** Data Visualization(proficient), Web Crawler(beginner), Database Management(beginner).
- **Foreign Language:** English(Daily & Academic usage), Japanese(Daily usage).