

# WENJIE SUN

email: [12233339@mail.sustech.edu.cn](mailto:12233339@mail.sustech.edu.cn); [wj.sun@siat.ac.cn](mailto:wj.sun@siat.ac.cn); [wenjie1835@gmail.com](mailto:wenjie1835@gmail.com) Tel: +86 13895591107  
Address: Southern University of Science and Technology, No. 1088 Xueyuan Avenue, Shenzhen, China 518055

## EDUCATION

**Northeast University (NEU)** **Shenyang, China**

Bachelor of Applied Chemistry 2018.09 – 2022.07

- Overall GPA: 3.03/5.0(80.3/35%)

**Southern University of Science and Technology (SUSTech)** **Shenzhen, China**

Master of Electronic Information 2022.09-2025.07(expected)

- Overall GPA: 3.39/4.0(86.3/7%)

**Major Courses:** C++ Programming, MATLAB Programming, Modern Signal Processing, Mathematical Statistics, Linear Algebra, Scientific Robot Design, Electronic Functional Materials and Devices, Principles of Automatic Control.

## PUBLICATIONS

- **Wenjie Sun**, ..., Wenjiao Yao, Zhile Yang. "*State-of-charge estimation of sodium-ion batteries: A fusion deep learning approach*" published in **Journal of Energy Storage**.
- **Wenjie Sun**, Chengke Wu, ..., Zhile Yang. "*CauseTerML: Causal Learning via Term Mining for Assessing Review Discrepancies*" under the second round of review in **IEEE Transactions on Artificial Intelligence**.
- **Wenjie Sun**, ..., Wenjiao Yao, Zhile Yang "*Fine-Tuning Enables State of Health Estimation in Lithium-Ion Batteries via Time Series Foundation Model*" under the first round of review in **Energy**.
- Junjie Jiang, **Wenjie Sun**, ..., Zhile Yang "*Ont4RE: A computational framework for distant supervision and entity-property relation extraction from construction documents*" under the first round of review in **Engineering Applications of Artificial Intelligence**.

## RESEARCH INTERESTS

Causal Inference; Causal Discovery, Language Understanding, Trustworthy AI.

## RESEARCH EXPERIENCE

**Estimating Lithium Battery State of Health by Fine-tuning Time Series Base Model** **SUSTech**

Advisors: **Prof. Wenjiao Yao** (Department of Carbon Neutrality, Shenzhen Institutes of Advanced Technology, CAS)  
Nov. 2023 - Present

- We fine-tuned TimeGPT, a time series foundation model, to achieve high-precision state of health estimation for lithium-ion batteries, eliminating the need for complex feature engineering traditionally required in battery health estimation.
- To enhance generalization, we utilized a diverse fine-tuning dataset comprising 143 lithium-ion batteries with six different cathode materials. The resulting model demonstrated strong performance on unknown battery domains, indicating its potential for rapid adaptation to novel scenarios.
- Our fine-tuned TimeGPT model outperformed the majority of state-of-the-art approaches, including supervised models, when compared against five categories of neural network-based models across 12 strong baselines.
- This paper has been submitted to Energy (Under review, First author).

**Causal Learning via Term Mining for Assessing Review Discrepancies** **SUSTech**

Advisors: **Dr. Chengke Wu** (Department of Integration, Shenzhen Institutes of Advanced Technology, CAS)  
Jun. 2023 - Present

- Proposed CauseTerML, a novel framework combining term mining and causal inference techniques to assess biases in innovation evaluation processes, particularly focusing on the impact of title technicality on patent authorization duration.

- Developed TerPOSMI, a hybrid unsupervised term extraction method that integrates statistical and rule-based approaches, addressing challenges in handling interdisciplinary and time-sensitive terminology.
- Introduced Multi-character Mutual Information (MMI) to overcome limitations of traditional Point-wise Mutual Information, enhancing the ability to identify multi-word terms and normalize for word frequency effects.
- This paper has been submitted to **IEEE Transactions on Artificial Intelligence** (Under review, First author).

#### **State of Charge estimation of Sodium-Ion batteries based on deep learning method**

SUSTech

Advisors: Prof. [Zhile Yang](#) (Department of Integration, Shenzhen Institutes of Advanced Technology, CAS )

Dec. 2022 - Mar. 2024

- Conducted comprehensive experimental studies on laboratory-fabricated sodium-ion batteries, providing valuable datasets for research on various cathode materials under different operating conditions.
- Proposed a novel fusion deep learning model combining BiLSTM and N-BEATS to address the unique challenges of SOC estimation in sodium-ion batteries, particularly the low voltage sensitivity to SOC.
- Developed an adaptive fusion algorithm to integrate BiLSTM and N-BEATS networks in parallel, demonstrating superior performance compared to individual models and offering a viable solution for battery management systems in sodium-ion batteries.

•Paper link: [https:// www.sciencedirect.com/science/article/abs/pii/S2352152X24011125/](https://www.sciencedirect.com/science/article/abs/pii/S2352152X24011125/) (First Author)

#### **Undergraduate Graduation Project**

NEU

Advisors: Prof. [Xinxin Xu](#) (Department of Science, NEU)

Mar. 2022 - Jul. 2022

#### **Preparation and Electrocatalytic Performance Study of Polypyrrole-Derived Carbon Materials**

- Synthesized and characterized polypyrrole/butane carboxylic acid (PPy/BTA) gels doped with various Fe/Ni ratios, identifying the optimal Fe:Ni ratio of 1:2 for enhanced oxygen evolution reaction (OER) catalytic activity in alkaline conditions.
- Demonstrated the superior electrocatalytic performance and stability of the optimized Fe:Ni 1:2 PPy/BTA gel catalyst for both OER and hydrogen evolution reaction (HER), exhibiting low overpotentials and minimal degradation after prolonged cycling.

### **ACADEMIC PROJECTS**

#### **Design Optimization and Structural Performance Assessment of Reachy Robot**

SUSTech

Advisors: Dr. [Fang Wan](#) (Innovation and Creative Design, SUSTech)

**Overview:** Developed a robotic prototype aimed at addressing social challenges through innovative design and ethical considerations..

#### **Contribution:**

**Advanced 3D Modeling and Simulation:** Utilized Fusion 360 to create detailed 3D models and simulations, optimizing robotic components for both performance and manufacturability.

**Algorithm Development for Autonomous Functionality:** Designed and implemented sophisticated control algorithms to enable autonomous decision-making and interaction, ensuring ethical and socially beneficial behavior in real-world scenarios.

Course Website: <https://des5002.ancorasir.com/des5002-designing-robots-for-social-good-autumn-2022/>

### **HONORS AND AWARDS**

Northeastern University's Annual Outstanding Student Journalist

Sep.2018-Sep.2019

Outstanding Volunteer for the Undergraduate Robotics Competition

Oct.2018

Northeastern University Chemistry Experiment Innovation Design Competition – Second Place

Jun.2020

2022 CAS University Science and Art Fusion Creation Competition - Second Place

Nov.2022

## EXTRACURRICULAR ACTIVITIES & SKILLS

---

• Head of Planning Department in NEU Online Network Media Studio

May. 2019 - Jul.2021

**Interests:** Photography; Basketball; Travelling; Hiking; Fitness;

Content creator: [https://space.bilibili.com/416517790?spm\\_id\\_from=333.1007.0.0](https://space.bilibili.com/416517790?spm_id_from=333.1007.0.0)

**Programming:** C, C++, Python (Pytorch, Tensorflow, PyG), Mathematica, LATEX, R, MATLAB

**English:** TOEFL: 93 (Currently), CET-6: 526, CET-4: 543, Mandarin (native speaker)