Resume of Haoyu Luo

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Education

Southeast University, China (SEU) **Nanjing, China**
Bachelor of Engineering in Electronic Science and Technology Sep 2021 - Jun 2025
Average Score: 86.01/100 | **GPA**: 3.42/4.0

Publications

Nan Li^{+}, Mengjia Wang^{+}, **Haoyu Luo**, Stephen D. Tse, Yun Gao, Zhen Zhu, Hongxuan Guo, Longbing He, Chao Zhu, Kuibo Yin, Litao Sun, Jie Guo, and Hua Hong*. 'Preparation and Properties of Graphene-Reinforced Polylactic Acid Bioelectronic Nanocomposites with Tissue Regenerative Functions' ($^{+}$:co-first author of the paper, Biomaterial Advances, https://doi.org/10.1016/j.bioadv.2024.214113)

Haoyu Luo, Wuhan Yuan, Hua Hong*. 'Preparation and fabrication of biocompatible polymers from field-controlled nanomaterials' (Carbon Trends)

Haoyu Luo, Hua Hong*. 'Fabrication of Functional Polymer Composite Enhanced with Vertically Aligned Carbon Nanotube via a Multi-frequency Electric-field-assisted Method' (IEEE 3M-NANO conference, Ei index)

Haoyu Luo, Quan Shi, Dongli Dai, Xinyao Wu and Tong lin*. 'Material Relevant Metasurface Efficient Hybrid Grating Couplers Design for Sub-micron Lithium Niobate Waveguides' (Under Review, Optics Express)

Quan Shi, Dongli Dai, Xinyao Wu, **Haoyu Luo**, Kaiyi Li and Tong lin*. 'Efficient Hybrid Amorphous Silicon Grating Couplers Design for Sub-micron Lithium Niobate Waveguides with Metal Metasurface layer' (ICAIT conference)

Research Experience

Synthesis and Processing of Carbon Nanomaterial and Application of Sensor **Nanjing, China**
Research Assitant, Key Laboratory of MEMS of Ministry of Education, China, Supervisor: Prof. Hua Hong
Jan 2022 - Present

Innovation: Created an implantable spinal supporting material that doubles as a dielectric sensor layer and features a spin support using the dielectrophoresis.

- A new VACNT material was created and tested for electronic properties, using theory and simulation (COMSOL) .
- Developed a new method to control the anisotropy and distribution of carbon nanotubes using a frequency-dependent alignment technique
- This material is used in MEMS biosensors as a dielectric sensitive layer for pressure sensors

Graphene–Reinforced Polylactic Acid Bioelectronic Nanocomposites, and the integrating passive electronic system with simulator and sensor into implantable device **Wuxi, China**
Research Assistant, SEU-FEI Nano-Pico Center, Supervisor: Prof. Hua Hong
Nov 2023 - Present

Innovation: A novel NFC-powered, passive bioelectrical stimulation and impedance sensing system is developing, integrating flexible electrodes with graphene-reinforced PLA (G-PLA) nanocomposites. This system enables efficient tissue interface monitoring and stimulation, with wireless communication for biomedical applications.

- A novel in-situ G-PLA polymer-solution-processing approach is invented
- SEM/TEM/FTIR/XRD/etc. characterization analysis
- The property of the material-tissue interface is considered and tested when it used as implantable devices interface by using a series of human cell.
- GPLA integrated bioelectrical stimulation and electrical impedance system development, including passive communication and signal readout.

Design and Optimization of LN Grating Coupler **Nanjing, China**
Research Assistant, SEU Advance Photonic Center, Supervisor: Prof. Tong Lin
Feb 2024 - Present

Innovation: New structure of LN waveguide sub-micro mode-pulling metasurface grating coupler is designed and simulated

- A novel structure with metasurface and mode-pulling is proposed
- The coupling efficiency beyond any previous work with brand new structure

Portable Heat MEMS Wind Speed and Direction Sensor **Nanjing, China**
Research Assistant, Team Leader Key Laboratory of MEMS of Ministry of Education, China; Supervisor: Prof. Zhenxiang Yi
Sept 2022 - Oct 2023

Innovation: Designed a new architecture to build portable device in measuring wind direction and speed by heat

- Improved precision by the algorithm and
- Minimized the volume of the compact device
- Lower the power consumption by 72.7% and increase the system robustness

Leadership

Enterprises Jointly Cultivate Elite Class **Nanjing, China**
School organizer July 2022 - July 2024

- Training in developing cooperation skills and participate in production management.
- Issue reproduction, symptom capture, and hands-on debugging for coexistence testing

ECE Student Union, Department of administration and management **Nanjing, China**
Chair June 2022 - August 2023

- Contact with Student Affairs
- Distribute tasks and activity to each institude below

Data-analysis for Information About China Economic Development **Nanjing, China**
Student Research Training Project, Supervisor: Prof. X.J. Xia Feb 2022 - June 2022

AI Digitalization and Intelligence of Intangible Cultural Heritage (Chinese Drama) **Anhui, China**
Team leader,National Student Practice Project Nov 2021 - Apr 2022

Honors & Awards

- SEU Outstanding Student (Top 10% in the department)
- PLD competition, Winner Prize (Top 3%);
- SEU Social Influence Group, NO.1 Prize (Leader, top 0.3%);
- 2022 Merit Student
- SEU Physics Thesis Competition, Prize (Top 10%);
- SEU Outstanding Individual, (Top 0.4%)

Skills & Interests

Programming Languages: Python, C/C++, MATLAB , Verilog HDL
Tools & Frameworks: Git, LaTeX, Pytorch, Solidworks, Comsol, CFD, CSS, Keil, Lumerical
Platform: Linux (Ubuntu), macOS, Windows
Languages: Mandarin (Native), English (Proficient)
Interests: Badminton, Swimming, Hiking, Dancing