Ning An

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EDUCATION

- **Southeast University** *Sep. 2022 – Present*
  B.E. in Computer Science and Technology Nanjing, China
  - **GPA:** 3.93/4.0 **Average Score:** 91.45/100 **Rank:** 5/106

INTERNSHIP

- **Johns Hopkins University** *Jun. 2025 – Sep. 2025*
  Research Intern in the Department of Computer Science *Advisor: Prof. Renjie Zhao* Baltimore, USA

PUBLICATIONS

[C1] **Ning An**, Ruirong Huang and Renjie Zhao. **PowerFi: Turning Billions of Wi-Fi Devices Into Ambient Power Sources**. *Under Review*

[C2] Shuai Wang, **Ning An**, Shuai Wang, Weiwei Chen and Xianjun Deng. **CTx: A Concurrent Transmitter for Heterogeneous IoT Communication**. *In submission*

[C3] Yike Wu, **Ning An**, Zixuan Zeng and Youyong Kong. **Hierarchical Spatiotemporal Attention Network for Fine-grained Brain Cognitive State Recognition**. *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. 2025.

RESEARCH EXPERIENCE

- **Research on the Wireless Power Transfer based on WiFi** Johns Hopkins University
  Research Intern, advised by Prof. Renjie Zhao Baltimore, USA
  PowerFi: Turning Billions of Wi-Fi Devices Into Ambient Power Sources *Jun. 2025 - Present*
  - Proposed a novel power waveform design for Wi-Fi powering devices with controlled PAPR that jointly optimizes for transmitter and receiver nonlinearities.
  - Designed a software-only method to generate power-optimized waveforms on unmodified COTS Wi-Fi hardware by sending dedicated data packets
  - Implemented and evaluated the design with COTS Wi-Fi devices and a custom energy harvester.

- **Research on the Concurrent Communication of WiFi and ZigBee in PHY-layer** Southeast University
  Research Intern, advised by Prof. Shuai Wang Nanjing, China
  CTx: A Concurrent Transmitter for Heterogeneous IoT Communication *Dec. 2023 - Jun. 2025*
  - Investigated the problem of decreased spectrum utilization efficiency in heterogeneous IoT, which is a challenging issue due to the fundamental incompatibility in heterogeneous IoT PHY layers.
  - Proposed a novel heterogeneous signal concurrent transmitter, capable of transmitting WiFi and ZigBee to the commodity WiFi and ZigBee devices concurrently, thereby enhancing the spectrum efficiency and throughput of the wireless network.
  - Presented an innovative concurrent modulation algorithm exploiting the inherent bit robustness and other features in physical layer, enabling simultaneous transmission of WiFi and ZigBee on overlapping frequency bands without packet loss.

- **Research on Unified and Adaptive Scheduling for Heterogeneous GPU Clusters** Southeast University
  Research Intern, advised by Prof. Ruiting Zhou Nanjing, China
  Dec. 2024 - Present
  Project Contribution:
  - Developed a scheduling system with a unified abstraction for spatio-temporal GPU sharing, enabling compatibility across any sliceable GPU, regardless of its manufacturers.

◦ Designed a low-overhead scheduling algorithm, designed to be highly scalable for large-scale heterogeneous GPU clusters and featuring an adaptive batching mechanism.

My Contribution:

◦ Reproduced and adapted two existing homogeneous multi-GPU scheduling algorithms for a heterogeneous cluster environment.

◦ Established a heterogeneous testbed by partitioning 8 NVIDIA A100 GPUs using Multi-Instance GPU (MIG) technology to benchmark against our proposed solution.

- **Research on Spatiotemporal Attention Network for Brain Signal Decoding** — Southeast University
  Research Intern, advised by Prof. Youyong Kong — Nanjing, China

  Hierarchical Spatiotemporal Attention Network for Fine-grained Brain Cognitive State Recognition — *Oct. 2023 - Nov. 2024*

  ◦ Designed a static-dynamic encoding structure to extract information of the brain from BOLD-fMRI signal, and use spatiotemporal cross attention to achieve information fusion of different modalities.

  ◦ Proposed a hierarchical guided brain cognitive state recognition model, which uses coarse-grained cognitive domain labels to guide the training of specific models under each domain to predict the fine-grained brain state.

HONORS AND AWARDS

- National Scholarship (top 5%) — 2024
- The Southeast University President Scholarship (top 2%) — 2023
- Excellent Student Cadre — 2023 & 2024
- Cyrus Tang Caring Heart Scholarship — 2022

SKILLS

- **Programming:** Matlab, C, C++, Python, LaTeX, Rust, Java
- **Software & Platform:** Matlab, GNU-Radio, Pytorch
- **Language:** English (fluent), Chinese (native)