



# Xiaofan GUO

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📍 Paris, France

## APPLICATION FOR A PHD POSITION IN TELECOMMUNICATIONS AND NETWORK

Motivated final-year engineering student specializing in wireless communication and IoT systems, currently seeking a PhD position in telecommunications and intelligent networks. Experienced in containerized 5G core deployment, energy consumption analysis, and orchestration using Kubernetes, Prometheus, and Kepler. Applied both Deep Neural Networks (DNN) and Graph Neural Networks (GNN) to indoor localization tasks, exploring AI integration for energy-efficient networks. **Research Interests** include modern communication infrastructures, wireless networks, Wi-Fi, indoor positioning, virtualization, and sustainable networking.

## EDUCATION

**Engineering Degree | ISEP - Institut Supérieur d'Électronique de Paris, France** Sep 2022 - Present

- Wireless Communication and IoT Systems
- Currently in final year

**Bachelor's Degree | UCA - Université Clermont Auvergne, France** Sep 2018 - Jul 2022

- Computer Science
- Graduated with highest honors (Mention Très Bien)

## PUBLICATIONS

• **Xiaofan Guo**, Wafa Njima. *Indoor Localization in IoT Networks Based on Graph Neural Networks*. Manuscript in preparation.

• **Xiaofan Guo**, Sishan Wang, Haiying Zhou, et al., *Performance Evaluation of the Networks with Wi-Fi based TDMA Coexisting with CSMA/CA*, Wireless Personal Communications 114, 1763-1783(2020).

## RESEARCH PROJECTS

**Indoor Localization Using Graph Neural Networks** Sep 2024 – Jan 2025

Final-year engineering project – Currently being written for scientific publication

- Modeled indoor positioning using multi-floor **RSSI** data from the UJIIndoorLoc dataset
- Performed data preprocessing: normalization, floor label extraction, and feature selection
- Built and fine-tuned a **DNN** with fully connected layers using Python
- Constructed and optimized a **GNN** with **k-NN** graph topology using **PyTorch Geometric**
- Achieved average positioning error under 6m with DNN and under 4m with GNN
- Compared both models in terms of positioning accuracy (in meters) and time complexity

**Wi-Fi Access Point Synchronization via PTP** Sep 2021 – Jan 2022

Bachelor's thesis – Dissertation recognized at the provincial level (Hubei, China, 2022)

- Implemented high-precision time synchronization across multiple Wi-Fi routers using **PTP**
- Designed and tested two topologies: direct link and extended VLAN-switch architecture
- Enabled hardware timestamping to enhance synchronization precision
- Configured and debugged PTP using Linux tools (**ptp4l**, **phc2sys**)
- Measured clock drift, jitter, and synchronization stability under varying conditions
- Achieved 2–4 µs accuracy with consistent performance across test scenarios

## PROFESSIONAL EXPERIENCE

<b>Orange Innovation, Châtillon, France</b> Research Intern – Energy Efficiency in 5G Core Networks	Mar 2025 – Present
<ul style="list-style-type: none"><li>- Deployed <b>Free5GC</b> and <b>OpenAirInterface (OAI)</b> core networks on <b>Kubernetes (Kind)</b> in Linux VM</li><li>- Analyzed energy consumption using <b>Prometheus</b></li><li>- Visualized and compared energy metrics using <b>Grafana</b> dashboards</li><li>- Proposed and validated optimization strategies to reduce energy usage in the OAI architecture</li><li>- Investigated adaptive and eco-efficient orchestration strategies based on <b>large language models (LLMs)</b></li></ul>	
<b>YueXiang - Dongfeng Motor Co., Ltd, Wuhan, China</b> Internship – Autonomous Vehicle Data Collection and Evaluation	Apr 2021 – Jul 2021
<ul style="list-style-type: none"><li>- Collected and analyzed data from autonomous vehicle test runs</li><li>- Conducted mapping and testing of autonomous driving routes</li><li>- Evaluated system performance and safety under controlled test conditions</li></ul>	

## ENGINEERING PROJECTS

<b>End-to-End Data Lake Architecture</b>	Mar 2024 – Jun 2024
<ul style="list-style-type: none"><li>- Extracted and cleaned <b>REST API</b> data with <b>Python</b> and <b>Pandas</b></li><li>- Built multi-stage data pipelines and automated workflows using <b>Apache Airflow</b></li><li>- Indexed data into <b>Elasticsearch</b> and visualized results in real time with <b>Kibana</b></li></ul>	
<b>Sensor-Based Security System</b>	Mar 2024 – Jun 2024
<ul style="list-style-type: none"><li>- Developed a Java-based <b>Android</b> app with <b>ROOM</b> database and <b>Google Maps API</b></li><li>- Enabled Bluetooth communication with temperature, heart rate and fall sensors for real-time monitoring</li><li>- Implemented anomaly detection logic to trigger alerts based on abnormal sensor data</li></ul>	
<b>Environmental Detection and Alarm System</b>	Oct 2023 – Jan 2024
<ul style="list-style-type: none"><li>- Programmed in <b>C++</b> on a <b>TIVA board</b> to monitor sound, temperature, and CO<sub>2</sub> via analog sensors</li><li>- Processed signals through ADC with threshold evaluation and interrupt handling</li><li>- Displayed real-time readings on an OLED screen and triggered alarms via buzzers</li></ul>	
<b>Image Processing and Recognition System</b>	Dec 2021 – Mar 2022
<ul style="list-style-type: none"><li>- Built a Python-based image pipeline using <b>OpenVINO</b> for face and expression recognition</li><li>- Optimized <b>DNN</b> models for real-time inference on edge devices</li><li>- Integrated USB camera and improved processing to boost frame rate and reduce latency</li></ul>	

## TECHNICAL SKILLS

<b>Programming Languages</b>	Java, Python, JavaScript, C++, C, R, PHP, HTML/CSS
<b>DevOps &amp; Automation</b>	Docker, Kubernetes (Kind), Helm, Git, Apache Airflow
<b>Monitoring &amp; Observability</b>	Prometheus, Grafana, Kepler, Wireshark
<b>Databases</b>	SQL, MySQL, PL/SQL, MongoDB
<b>Operating Systems</b>	Linux (VM, Ubuntu, Lubuntu), Windows

## LANGUAGES

## EXTRACURRICULAR ACTIVITIES

Chinese	C2	<ul style="list-style-type: none"><li>- <b>VOLUNTEER – PARIS 2024 OLYMPIC GAMES</b> IT &amp; Systems Team – Technical support at the main press center.</li></ul>
English	B2	<ul style="list-style-type: none"><li>- <b>VOLUNTEER – PARIS 2024 PARALYMPIC GAMES</b> Assistant to the Mongolian National Paralympic Committee delegation.</li></ul>
French	B2	<ul style="list-style-type: none"><li>- National-level competitive swimmer in China, recognized as a Class 2 athlete.</li></ul>