# Chuan Li

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## Research Profile (AI & Spatial Epidemiology)

- **Focus:** spatial and spatio-temporal AI for public health risk mapping; ecological determinants; explainable modeling.
- **Methodological strengths:** Bayesian spatial / spatio-temporal models; GNNs; deep spatio-temporal learning; causal/robust analysis; uncertainty.
- **Data & deliverables:** large-scale territorial datasets (demography, environment, healthcare); reproducible pipelines; maps & dashboards for policy-facing insights.

## Education

**Sorbonne Université** — Paris, France
*Ph.D. in Computer Science* — *Doctoral contract: Oct 2022 – Oct 2025*
– **Defense:** 17 Nov 2025 **Labs:** LIPADE (Université Paris Cité) & SAMOVAR (Télécom SudParis, IP Paris)
– **Thesis:** *Spatio-Temporal Modeling for Public Health and Electric Mobility: From Digital Contact Tracing to Equitable EV-Charging Networks.*
– **Advisors:** Prof. Hassine Moungla & Prof. Vincent Gauthier

**INSEAD** — Fontainebleau, France
*Business Foundations Certificate (BFC) — Executive Education* — *2025*

**Heidelberg University** — Heidelberg, Germany
*Visiting Scholar (4EU+): spatio-temporal modeling & infectious-disease prediction* — *Mar – Oct 2025*

**Massachusetts Institute of Technology** — Cambridge, USA
*MicroMasters in Statistics and Data Science* — *Sep 2021 – Oct 2022*

**Sorbonne University – Polytech Sorbonne** — Paris, France
*M.Eng. in Electrical & Computer Science (GPA 17.83/20, Rank 2/48)* — *Sep 2018 – Jul 2021*

**University of Poitiers** — Poitiers, France
*B.Sc. (Year 2) in Electrical & Computer Engineering (GPA 13.88/20, Rank 8/120)* — *Sep 2016 – Jul 2018*

## Research Experience

**LIPADE (Université Paris Cité) & SAMOVAR (Télécom SudParis)** — Paris / Palaiseau, France
*Ph.D. Researcher — Spatio-Temporal AI for Public Health & Geospatial Optimization* — *Oct 2022 – Nov 2025*
– Built end-to-end pipelines for large-scale spatio-temporal learning: data integration, feature engineering, modeling, evaluation, and map-based reporting.
– Developed graph-based methods (GNNs / heterogeneous graphs) for risk forecasting and spatial pattern discovery on mobility and territorial data.
– Public-health track: digital contact tracing on empirical contact networks; risk inference under uncertainty; operational evaluation for policy use.
– GeoAI track: equitable infrastructure planning under constraints (accessibility, efficiency, sustainability) with scalable optimization.

**Télécom SudParis (Institut Polytechnique de Paris)** — Palaiseau, France
*Research Engineer — Spatio-Temporal Data Analysis* — *May – Oct 2022*
– Designed spatial gridding and aggregation strategies (administrative units and grid cells) for large mobility datasets; produced interpretable indicators and maps.

## Selected Projects (Public Health / Spatial Risk Mapping)

**Digital Contact Tracing on Empirical Contact Networks** — 2022 – 2025
– *ANR project; collaboration with the World Bank.*
– Modeled transmission risk on real-world contact networks; quantified utility under different adoption and policy scenarios; delivered reproducible evaluation framework.
– Methods: probabilistic inference, graph learning, spatio-temporal signals; emphasis on interpretability and uncertainty reporting.

**Spatio-Temporal Forecasting for COVID-19 Mobility in Peru (case study)** — 2024 – 2026

– Developed spatio-temporal models with neighborhood fusion; performed ablations and robustness analysis; produced policy-facing visualizations.

**Territorial Risk Diagnostics & Decision Support (maps & dashboards)** 2023 – Present

– Designed geo-analytics outputs: hotspot maps, spatial autocorrelation reports, temporal trend views, and interactive dashboards for stakeholders.

## Applied / Industry Research

**Renault Group — Alliance Engineering Dept. (DEA-TDV)** Guyancourt, France
*Research Engineer (Applied ML & Data Systems)* *Sep 2018 – Aug 2021*

– Optimized ADAS reliability using Python and ML-driven analytics; reduced testing effort via scenario prioritization and monitoring dashboards.

– Built automated reporting tools (VBA/Python) for sensor-performance tracking and operational diagnostics.

**4EU+ / Renault Group — Doctorant conseil en innovation (consulting lead)** Paris, France
*Strategic Road Noise & Energy Efficiency Challenge* *Jan – Jul 2025*

– Co-developed a scalable road-traffic noise model (RMSE 3.8 dB(A), $\rho$=0.83) and delivered policy diagnostics for speed-limit impact evaluation.

– Led refactoring, validation, and deployment recommendations; recognized by the project committee for methodological innovation and practical relevance.

**CAMEL-AI.org** Remote (London, UK)
*Technical Illustrator & Communication Ambassador (part-time)* *Nov 2024 – Present*

– Created technical diagrams and communication assets for AI research dissemination; collaborated with researchers to improve clarity and accessibility.

## Teaching Experience (Selected)

**Polytech Sorbonne (Sorbonne Université)** Paris, France
*Teaching Associate* *2022 – 2025*

– Computer Architecture; Java OOP (course lead); C programming; tools for computer science.

**ENSTA Paris** Palaiseau, France
*Teaching Associate — C programming (IN101)* *2023 – 2024*

**ESIEE Paris** Noisy-le-Grand, France
*Lecturer — Deep Reinforcement Learning* *2023 – 2025*

## Selected Publications

## Accepted

- Li, C., Zhao, S., Gauthier, V., & Moungla, H. “Large-Scale Optimisation of Electric-Vehicle Charging Infrastructure.” *Proc. ACM SIGSPATIAL 2024.* Atlanta, GA,USA (Oral Presentation & GISCup Best Paper Award).
- Li, C., You, J., Gauthier, V., Nunez del Prado Cortez, M., Alatrista-Salas, H., & Moungla, H. “Enhancing Spatio-Temporal Forecasting with Spatial Neighbourhood Fusion: A Case Study on COVID-19 Mobility in Peru.” *IEEE ICASSP 2026.* Barcelona, Spain
- Li, C., Gauthier, V., Nunez del Prado Cortez, M., Alatrista-Salas, H., & Moungla, H. “On the utility of Digital Contact Tracing on empirical contact network.” *Netmob 2025.* Paris, France (Oral Presentation and Top 3 Best papers).
- Li, C., Gauthier, V., H., Moungla, H. & Hu, Z. "Discovering Functional Urban Zones via Heterogeneous Graph Convolution on High-Resolution Mobility Data." *NetMob 2025.* Paris, France
- Li, C., Yang, R. “An Applied ML Pipeline for Geospatial Groundwater-Level Classification Supporting Early Warning & Resource Planning.” *ICML 2025 NewInML Workshop.* Vancouver, Canada
- Li, C., Yang, R., Gauthier, V., & Moungla, H. "Automated Ensemble Learning for Proactive Groundwater Management: Early Warning and Allocation." *ACM SIGSPATIAL 2025 GeoAI Workshop.* Minneapolis, MN, USA (Full Research Paper & Oral Presentation).
- Hu, Z., Li, C., Gauthier, V., & Moungla, H. “Fine-Grained Urban-Grid Clustering of Mobile-Phone Metadata with Deep Spatio-Temporal Clustering.” *IEEE IJCNN 2025.* Rome, Italy (Oral Presentation).
- Hu, Z., Li, C., Gauthier, V., Nunez del Prado Cortez, M., & Moungla, H. “Spatio-Temporal Analysis of Mobile Service Consumption for Social-Signature Clustering.” *NetMob 2023.* Madrid, Spain

## Under Review

- Li, C., Gauthier, V., Nunez del Prado Cortez, M., Alatrista-Salas, H., & Moungla, H. “Assessing the Usefulness of Digital Contact Tracing Using Real-World Contact Data.” *Scientific Reports, Nature Portfolio.*
- Li, C., Zhao, S., Gauthier, V., & Moungla, H. “DOVA-PATBM: An Intelligent, Adaptive, & Scalable Framework for Optimising Large-Scale EV-Charging Infrastructure.” *ACM KDD 2026.* Jeju, Korea
- Li, C., Gauthier, V., H., Moungla, H. & Hu, Z. "Unveiling Functional Urban Structures with Heterogeneous Graph Learning on Fine-Grained Mobility Data." *IEEE IJCNN 2026.* Maastricht, Netherlands
- Yang, R., Li, C. “ Semi-Automatic Connection Recovery of 3D Tubular Structure Skeletons via Component-Wise MST and Filtered Delaunay Triangulation. ” *IEEE ICIP 2026.* Tampere, Finland

## Ongoing

- Li, C., Gauthier, V., Nunez del Prado Cortez, M., Alatrista-Salas, H., & Moungla, H. "Belief Propagation for Digital Contact Tracing: Infection-Time Inference and Risk Forecasting A Case Study on Real-World Data from Peru." *ACM KDD 2026.* Jeju, Korea
- Li, C., Gauthier, V., Nunez del Prado Cortez, M., Alatrista-Salas, H., & Moungla, H. “Nation-Scale Risk Mapping from Human Mobility Data Using Time-Decayed Line Graphs.” *ACM KDD 2026.* Jeju, Korea
- Hu, Z., Li, C., Naima, M., & Gauthier, V. “Distribution Shift for Spatio-Temporal Networks.” *ACM KDD 2026.* Jeju, Korea
- Li, C., Yang, R., Gauthier, V., & Moungla, H. "A Generalizable Multi-Agent Model for Flood Prediction and Water Resilience." *Nature Water 2026*
- Li, C., Zhao, S., Li, X., Geng, W., Li, M., Gauthier, V., & Moungla, H. “Realistic Road-Network Accessibility of Electric Vehicle Charging Infrastructure in the United States.” *Nature Cities 2026.*

## Honors & Awards (Selected)

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| **NetMob 2025 — Top-3 Best Paper** | Paris, France |
| **ACM SIGSPATIAL GIS Cup 2024 — 1st Place** | Atlanta, USA |
| **Datathon Sécurité Ferroviaire 2025 — 3rd Place** | Paris, France |
| **Hi! Paris Hackathon 2024 — Technical Excellence (4th)** | Paris, France |

## Academic Service

- Reviewer:ACM KDD; ACM WWW; ACM SIGSPATIAL; ECML-PKDD.
- Open-source and reproducible research practices; mentoring and collaboration across multidisciplinary teams.

## Technical Skills

- **Programming:** Python, R, SQL, C/C++, Java, Scala, MATLAB.
- **Spatial & Data:** GeoPandas, Shapely, Rasterio, PyProj, PostGIS, Spark; spatial joins, zonal stats, gridding, mobility features.
- **ML/AI:** PyTorch, TensorFlow; GNNs; spatio-temporal models; representation learning; calibration & uncertainty (experience-based).
- **GIS & Viz:** QGIS; interactive visualization and dashboards (e.g., Plotly/Streamlit/Dash if applicable).
- **Languages:** Chinese (native), French (fluent), English (TOEIC 855), Japanese (basic).

## Interests

- Ultra-trail running, marathon, swimming, cycling, photography.