

Chengxuan Li

Anticipated graduation: May 2028

PhD Candidate, Systems Engineering (Minor: Electrical and Computer Engineering), Cornell University

Email: lichengxuan@outlook.com ✉

Phone: +1 (607) 227 5495

Web: chengxuan-li.github.io ✉

Research Interests

AI/ML for engineering; inverse modeling, system identification, and surrogate learning; physics-informed learning; urban energy and power-system simulation; smart-meter/grid analytics; demand response and DER integration.

Education

Cornell University, Ithaca, NY

Aug 2024 – Present

PhD, Systems Engineering; Minor in Electrical and Computer Engineering

- Selected coursework: Deep Learning, Computer Vision, Signal Processing, Monte Carlo Simulation, Power Systems, Applied Optimization.

Architectural Association, London, UK

Jun 2024

M.Arch

- Selected focus across the M.Arch and BA (Hons): building energy modeling, building physics, renewable energy systems, net-zero operations, and post-occupancy evaluation.

Architectural Association, London, UK

Jun 2022

BA (Hons)

Research & Professional Experience

Environmental Systems Lab, Cornell University, Ithaca, NY

Aug 2024 – Present

PhD Researcher — Advisors: Prof. Timur Dogan, Prof. Oliver Gao, and Prof. Jacob Mays

- Develop ML, optimization, and physics-informed methods for demand inference, load prediction, and model calibration.
- Research inverse/surrogate modeling and system-identification methods for reduced-order and physics-based energy models using measured data.
- Build scalable simulation and data-analysis workflows for urban energy, electrification, demand response, and load flexibility.

Environmental Systems Lab, in collaboration with Avangrid / NYSEG, Tompkins County, NY

Mar 2025 – Present

PhD Researcher, Grid Innovations

- Build python-DuckDB-.NET processing pipelines for AMI and SCADA data for **80,000+ smart meters across 87 feeders**
- Train sequential clustering and load-duration prediction models on **3.8M load profiles, reducing NRMSE by 50.5%**.
- Develop physics-based models to forecast transformer- and feeder-level load profiles, peak demand, and load-duration behavior.
- Quantify demand response and distribution-grid flexibility under heat-pump/electrification growth and DER integration.

EnergyAtlas.io ✉, Ithaca, NY

Jan 2025 – Present

Lead Developer

- Lead development of EnergyAtlas, a C#/.NET city-scale energy digital-twin and simulation platform for building, utility, and urban energy analysis.
- Design simulation-engine architecture, RESTful APIs, and data pipelines integrating geometry/LiDAR, weather, schedules, utility data, and large-scale time-series workflows.
- Develop scalable simulation, calibration, solar/shading, and scenario-analysis methods for electrification, peak demand, demand response, and grid flexibility.
- Build Python interfaces, data models, and visualization workflows supporting reproducible analysis and integration with external research and planning tools.

Urban Systems Design MEP Engineers, London, UK

Jul 2023 – Sep 2023

Environmental Engineering Consultant

- Conducted sustainability assessment with **CBRE GWS** for 13+ **Google** workplace properties in the Americas.

Selected Publications

Chengxuan Li, Zihan Jimmy Wang, and Timur Dogan. “ShadingZip: Within-Building Selective Computation of Shading Profiles for Urban Building Energy Models.” *ASIM* 2026. Accepted.

Chengxuan Li and Timur Dogan. “Calendars of the City: Deterministic Schedule Libraries to Enhance UBEM Load Duration Forecasts.” *IBPSA-USA SimBuild 2026*. [Paper](#) · DOI: [10.26868/30680611.2026.1321](#)

Chengxuan Li and Timur Dogan. “Deriving high-fidelity residential building archetypes and typical usage patterns from national energy use surveys ...” *Building Simulation 2025, 19th Conference of IBPSA*. [Paper](#) · DOI: [10.26868/25222708.2025.1336](#)

Timur Dogan, **Chengxuan Li**, Hung Ming Tseng, Amber Jiayu Su, and Patrick Kastner. “A Bottom-Up Urban Building Energy Model for Evaluating Thermal Load Electrification Measures.” *Journal of Building Performance Simulation*. Published online July 2025; volume 19, issue 2 (2026), pages 289–316. [Paper](#) · DOI: [10.1080/19401493.2025.2536261](#)

Hang Xu, **Chengxuan Li**, Patrick Kastner, and Timur Dogan. “Understanding Urban Building Energy Consumption with Explainable Machine Learning Approaches.” *CAAD Futures 2025*. [Paper](#) · DOI: [10.25442/hku.29349755](#)

Presentations

“City-scale digital twins for building energy modeling and carbon reduction planning” — [Cesium Developer Conference 2026](#) · Philadelphia, PA. [Video](#) Jun 2026

“How Cities Can Plan the Energy Transition Using Urban Building Energy Models” — [IBPSA-USA Educational Webinar](#) · [Video](#) Feb 2026

“Urban Decarbonization Strategies” — [IBPSA USA Simulation Showcase Webinar Series 2026](#) Jan 2026

Awards & Funding

Nemetschek Innovation Award (€60,000 prize) — *Second place; highest award conferred* May 2026

IBPSA-USA Simulation Showcase (\$600 prize) — *Winner* May 2026

New York State Pollution Prevention Institute Competition (\$3,000 prize) — *Winner* Apr 2026

NYSP2I Research Grant (\$4,000) — *Co-PI with Prof. Timur Dogan* Nov 2025

Holcim Building Tomorrow Scholarship — *Winner; full sponsorship for the One Young World Summit 2025* Oct 2025

Bentley Systems Going Digital Awards 2025 — *Founders’ Honors* Oct 2025

Technical Skills

Programming: Python, C#/.NET, C++, SQL

ML & scientific computing: PyTorch, scikit-learn, pandas, NumPy; inverse and surrogate modeling, computational optimization, Monte Carlo simulation, system identification, time-series and signal processing

Energy & grid modeling: RC and reduced-order models, load-profile and load-duration analysis; smart-meter AMI/SCADA

Power systems: AC power flow (NR/FDLF), contingency and static security analysis, state estimation, ED/OPF, demand response and flexibility, DER integration

Advanced scientific computing: statsmodels; numerical methods, uncertainty and sensitivity analysis, reduced-order modeling, parameter estimation

Software, data & geospatial: ASP.NET/REST APIs, SQL/DuckDB, GeoPandas/Shapely/NetTopologySuite, LiDAR processing