

Nathan Lichtlé

PhD in Deep Learning, UC Berkeley

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Education

University of California, Berkeley (Expected 08/25) Ph.D., M.S., EECS, Berkeley AI Research (GPA 4.0)	2022 – Present <i>Expected Aug 2025</i>
École Nationale des Ponts et Chaussées, Institut Polytechnique de Paris. Ph.D., Mathematics	2021 – 2024 <i>Graduated Dec 2024</i>
École Normale Supérieure Paris-Saclay, Paris-Saclay University. M.S., Computer Science (MVA Master)	2017 – 2021

Skills

Languages	Python, C, C++, JavaScript, SQL, Bash
Frameworks	PyTorch, RLlib, SB3, CleanRL, Gym, OpenAI API, LangChain, LangGraph, ONNX, SUMO, raylib
Infrastructure	AWS (EC2/S3), Azure, SLURM, W&B, Docker, Git, Linux

Research & Engineering Experience

Research: 16 articles (13 first-author), incl. NeurIPS, T-RO, TCPS, CSM, ITSC, ICRA; ICML under review; full list on [website](#)

CIRCLES: World’s Largest RL-Driven Traffic Smoothing Field Test (100 Cars) 2020 – 2024
Collaboration with Toyota, Nissan, General Motors [\[code\]](#)

- Led the end-to-end design, training, validation, and deployment of RL controllers that drove 100 autonomous vehicles in the largest-ever traffic smoothing experiment, conducted on a live highway during rush hours
- Built the core data-based simulation framework and evaluation benchmarks used across the project, coordinating with 50+ researchers and industry partners to ensure safety, robustness, and scalability of deployed controllers
- Analyzed field data showing 10–20% energy savings near our AVs, which represented only 1–2% of total traffic

Largest-Ever Comparison of Deep RL Methods in Imperfect-Information Games 2024 – 2025 [\[code\]](#)

- Developed self-play RL benchmarks and ran 5,600+ hyperparameter sweeps across 4 large games
- Found that properly tuned policy gradient algorithms outperform specialized game-theoretic methods

Autoregressive CNNs for Sequential Traffic Prediction 2024 – 2025

- Trained CNNs to forecast traffic over long horizons by integrating hyperbolic PDEs with highway data
- Achieved 2–3x better accuracy than traditional numerical methods on large-scale benchmarks

Nocturne: Goal-Based 2D Driving Benchmark with Partial Observability 2021 – 2022
Collaboration with Meta AI [\[code\]](#)

- Built a fast C++ driving simulator with human-like partial observability and Python bindings for RL
- Created a large open-source benchmark with challenging coordination tasks from Waymo traffic data
- Achieved a 75% goal-reaching rate using decentralized multi-agent PPO with shared policies

Awards & Honors

Berkeley Fellow (1-year funding)	University of California, Berkeley	2022 – 2023
ENPC Scholarship (1.5-year funding)	École des Ponts ParisTech	2021 – 2022
ENS Fellow (4-year funding), ranked 68th nationwide in CS	ENS Paris-Saclay	2017 – 2021
Top 5%, Google Hash Code		2020
Top 1%, Le Shaker Hackathon		2018
Finalist, MDF Hackathon (ranked 7th/2000+)		2018

Talks, Media & Outreach

Invited speaker, Traffic and Autonomy Conference (Maiori, Italy)	June 2023
Podcast guest, INGENIUS ENPC, “Autonomous Driving for Traffic Flow Optimization”	Feb 2023
Press: CIRCLES work featured in Fortune, AP News, Popular Science, PR Newswire, TechXplore, CNRS, etc	
Poster presentations: NeurIPS 2023, NeurIPS 2022 (Math-AI), ICRA 2022, ITSC 2021	