

NAVID BAGHERI SHOURAKI

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EDUCATION

Sorbonne University

Ph.D. in Computer Science, EPITA Research Laboratory

Supervisors: Prof. Eric Moulines (EPITA Research Laboratory)

Prof. Alain Durmus (Ecole Polytechnique)

2025 – 2028

Paris, France

Institut Polytechnique de Paris (Ecole Polytechnique)

M.Sc. in Electrical Engineering: Machine Learning and Communications

Ecole Polytechnique (l’X), Center for Applied Mathematics; Telecom Paris

Master’s thesis supervisor: Prof. Eric Moulines

2024 – 2025

Palaiseau, France

Sharif University of Technology

B.Sc. in Electrical Engineering

GPA: 19.33/20; ranked 1st among 140 students in the Electrical Engineering Department

2020 – 2024

Tehran, Iran

RESEARCH INTERESTS

- Generative Models
- Diffusion Models
- Image Processing
- Reinforcement Learning
- Inverse Problems
- Optimization

PUBLICATIONS

- **UniGuide: Learning Guidance Policies for Multi-Objective Diffusion Sampling** 2026
N. Bagheri Shouraki, M. Hegazy, E. Moulines, A. Dieuleveut, M. I. Jordan, and Y. Janati.
ICLR 2026 ReALM-GEN Workshop; extended version under review.
- **Efficient Zero-Shot Inpainting with Decoupled Diffusion Guidance** 2026
B. Moufad, N. Bagheri Shouraki, A. O. Durmus, T. Hirtz, E. Moulines, J. Olsson, and Y. Janati.
ICLR 2026.
- **When Test-Time Guidance Is Enough: Fast Image and Video Editing with Diffusion Guidance** 2026
A. Ghorbel, B. Moufad, N. Bagheri Shouraki, A. O. Durmus, T. Hirtz, E. Moulines, J. Olsson, and Y. Janati.
ICLR 2026 ReALM-GEN Workshop.

RESEARCH AND WORK EXPERIENCE

Research Intern, CMAP, Ecole Polytechnique, Palaiseau, France

Mar 2025 – Sept 2025

Supervised by Prof. Eric Moulines and Dr. Yazid Janati.

Worked on Bayesian inverse problems with diffusion priors, posterior sampling, and training-free diffusion guidance, and trained generative models using Inductive Moment Matching for efficient few-step sampling.

Research Intern, Sharif University of Technology, Tehran, Iran

Sept 2023 – Mar 2024

Developed fast and context-aware audio annotation and classification methods for few-shot learning with limited labeled data. Extracted acoustic features, including Mel-frequency cepstral coefficients, spectral contrast, spectral centroid, and RMS energy, and evaluated classifiers for high-speed audio classification.

Research Intern, Startup, *Tehran, Iran*

Jun 2023 – Sept 2023

Applied YOLO-v7 and deep-learning-based object detection to construction-site safety monitoring. Detected warning cones, danger zones, and personal protective equipment to support health, safety, and environment (HSE) analysis.

HONORS AND AWARDS

- French Government Scholarship, Bourse du Gouvernement Français, 2024.
- Selected for the MBZUAI Winter School in Representation Learning and GenAI, among 60 participants chosen from 2,400 applications, 2026.
- Carnegie Mellon Institute of Technology Dean’s Fellowship, Electrical and Computer Engineering, Carnegie Mellon University, 2024.
- Electrical and Computer Engineering Department Fellowship, University of California San Diego, 2024.
- Ranked 1st for four consecutive years among 140 undergraduate students in the Electrical Engineering Department of Sharif University of Technology.
- Outstanding Student Award, Sharif University of Technology, 2024.

REVIEWING EXPERIENCE

ICLR *2026*

SKILLS

Programming Languages	Python, C/C++, MATLAB, Java
ML & Tools	PyTorch, scikit-learn, Hydra, Wandb, Slurm, Multi-GPU Training, Git
Software & Tools	Pspice, Proteus, ADInstruments LabChart, Simulink, Microsoft Office
Languages	English (Fluent), French (Intermediate), Persian (Native)

SELECTED COURSES

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| • Statistical Learning Theory | • Information Theory and Communication Systems |
| • Generative Models | • Convex Optimization |
| • Deep Learning | • Applied Engineering Economics |
| • Sequential Decision-Making and RL | • Linear Control Systems |
| • Neuroscience, Learning and Memory | • Probabilistic Machine Learning |

SELECTED COURSE PROJECTS

- Implemented and prepared a comprehensive report on modern generative models, covering ELBO-based training, VAEs, HVAEs, score-based diffusion models, DDPMs, DDIMs, flow matching, and SDE/ODE formulations of generative sampling.
- Implemented DCGAN and WGAN architectures and analyzed Wasserstein and sliced Wasserstein distance metrics for evaluating generated-sample quality.
- Implemented energy-based generative models and compared MCMC samplers, including Langevin dynamics, Metropolis-adjusted Langevin algorithm (MALA), and Hamiltonian Monte Carlo (HMC).
- Applied the Expectation-Maximization algorithm to Gaussian mixture model clustering of brain-tumor MRI images.
- Addressed Bayesian image inverse problems, including denoising, deblurring, and blind deconvolution, using total variation regularization, half-quadratic splitting, ADMM, and Gibbs sampling.

- Implemented Deep Q-Networks (DQN), Monte Carlo Control, SARSA, Q-Learning, and Expected SARSA for maze-solving tasks, comparing tabular and neural value-function methods in terms of convergence speed, success rate, path optimality, and exploration behavior.
- Implemented a movie recommendation system using regularized low-rank matrix factorization optimized with block-coordinate descent.
- Analyzed hierarchical representations in the human visual system by fine-tuning AlexNet on the Kay natural image dataset and comparing learned features with neural responses from V1, V2, V3, and lateral occipital cortex.
- Developed signal-processing tools for audio enhancement and communication systems, including modulation/demodulation analysis, recorded-speech quality enhancement, and optimal channel equalizer design.
- Developed a computational tool for solving partial differential equations using finite difference methods and visualizing solution dynamics for heat and wave equations.
- Implemented a cellular-automata-based particle swarm optimization algorithm and evaluated its optimization behavior across benchmark problems.