

KASRA ALIZADEH

AI Software Developer · Researcher in Signal Processing & Communication Systems

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PROFILE

Telecommunication engineer and AI software developer experienced in software development, machine learning, and signal processing for communication systems. A fast learner who tackles complex problems with persistence and analytical rigor to deliver precise, dependable solutions. Proactive and adaptable, I thrive in diverse teams and continuously expand my technical expertise. Highly self-driven and quick to master unfamiliar domains, I take full ownership of challenging problems and see them through to robust, well-engineered solutions.

EXPERIENCE

Software Developer — Seagull Cybernetics Jun 2022 – Jul 2023

- Built cloud-native AWS applications, contributing to AI/ML model integration, backend development, and system optimization.
- Developed core functionality in Python, supplemented with Java components where aligned with architectural requirements.

Data Scientist Intern — DataCoLab Jul 2021 – Aug 2021

- Worked on ML and deep learning projects on voice data, applying both classical ML models and modern neural architectures.
- Developed and evaluated solutions in Python and TensorFlow, with signal-processing libraries for feature extraction and training.

Research Assistant — Azad University, Tehran North Branch Sep 2020 – Jul 2021

- Built an SVM classifier for diabetes from clinical patient data, tuning hyperparameters with a binary Bat metaheuristic.
- Responsible for model design, feature preparation, and evaluation to ensure reliable and reproducible results.

EDUCATION

Politecnico di Milano — M.Sc. Telecommunication Engineering 2023 – Present
Major: Signals & Data Analysis Milan, Italy

Azad University, Tehran North Branch — B.Eng. Computer Engineering 2017 – 2021
Major: Software Engineering Tehran, Iran

PUBLICATIONS

Plant Stress Decoding from Electrophysiological Signals: A Bioelectrical Communication Framework Sep 2026

Proceedings of the 13th ACM International Conference on Nanoscale Computing and Communication (NanoCom '26)

DOI: 10.1145/3818305.3830252

- Reformulated plant stress detection as a receiver-side decoding problem over a biological communication channel, modeling the plant as a transmitter whose electrophysiological signals encode responses to environmental stress.
- Proposed a receiver architecture combining interference suppression, finite-horizon temporal integration, and multi-domain (statistical, temporal, spectral, multiscale) feature embedding, with histogram-based gradient boosting approximating the likelihood ratio.
- Achieved **macro-F1 of 0.9879, ROC-AUC of 0.9992, and PR-AUC of 0.9993** with ~0.10 ms inference time per segment.

HONORS & AWARDS

Best Paper Award — ACM NanoCom 2026 Sep 2026

Issued by the 13th ACM Int. Conference on Nanoscale Computing and Communication · Associated with Politecnico di Milano

- Awarded for the paper *Plant Stress Decoding from Electrophysiological Signals: A Bioelectrical Communication Framework*.

PROJECTS

Optical Carrier ODU Assignment Optimization — Politecnico di Milano & Nokia 2025

- Assigned ODUs to multi-carrier transponder framers under hardware constraints to optimize optical data transmission.
- Implemented and compared ILP, Greedy, GA, SA, PSO, and ACO, with smart traffic generation and performance visualizations.

Impact of Non-Gaussian Noise on LDPC Performance — Politecnico di Milano & Nokia 2024

- Built MATLAB simulations to evaluate BER vs. SNR of LDPC-coded 64-QAM systems under AWGN and Student's t-distributed noise.
- Demonstrated that LDPC codes remain robust under Gaussian noise but require higher SNR in non-Gaussian environments.

SKILLS & LANGUAGES

Programming: Python, Java, R, JavaScript, MATLAB

Data Analysis: NumPy, SciPy, Matplotlib, NLTK

Databases: MySQL, MongoDB

Languages: Persian (Native) | English (B2) | French (B1) | Italian (A2)

ML / DL:

Frameworks & Cloud:

Operating Systems:

PyTorch, TensorFlow, Scikit-Learn

Django, FastAPI, Flask, Spring, AWS

macOS, Linux, Windows