Amirhossein Dallalan

a.dallalan@gmail.com • +989359782886 • amirdallalan.ir

Iran, Mashhad • 6 Oct 2001

www.linkedin.com/in/amirdallalan

Summary

I began my journey in graphic design with Photoshop in 2011 and developed an interest in programming in 2016, focusing on C++ and algorithmic problem-solving. My passion for learning led me to self-study fields like physics, security, AI, and digital marketing. Specializing in AI, I am proficient in machine learning, deep learning, image processing, and signal processing using Python. I hold a Bachelor's degree in Biomedical Engineering from Imam Reza International University and am actively pursuing advanced studies in AI.

Currently, I work as a freelance AI specialist, focusing on machine learning, deep learning, and AI systems like RAG-based solutions, AI Assistants, and RL-driven AI Agents. My work spans healthcare, education, and productivity. With a background in Biomedical Engineering, I focus on creating intelligent systems that solve real-world problems. I also teach AI and programming courses, sharing my passion for responsible, cutting-edge AI development.

I hold multiple certifications in AI and machine learning, demonstrating my commitment to continuous learning and expertise in these fields. I also teach various programming and AI courses, including Advanced Python Programming, Version Control with Git, Basic MATLAB Programming, Signal Processing with MATLAB, Machine Learning Basics, and Programming with Python.

Education

ISLAMIC AZAD UNIVERSITY — Mashhad, Iran
Master's degree, Computer Science - Artificial Intelligence — Sep 2024 – Present

IMAM REZA INTERNATIONAL UNIVERSITY — Mashhad, Iran
Bachelor's degree, Biomedical Engineering — Sep 2020 – Jun 2024

Experience

FREELANCE — Mashhad, Iran
Machine Learning Developer — Sep 2023 – Present

IMAM REZA INTERNATIONAL UNIVERSITY — Mashhad, Iran
Technical Innovation Lead — Jun 2023 – Present

Spearheaded technical consulting for technology incubators and engineered cutting-edge solutions across key digital transformation domains. Led cross-functional project execution from concept to deployment.

- Intelligent Systems: Developing core intelligence for autonomous mobility systems, AI-powered threat assessment platforms, and adaptive conversational agents.
- Machine Learning Systems: Designed and implemented predictive models for academic and industrial applications
- MLOps Architecture: Established end-to-end model lifecycle management pipelines and CI/CD frameworks
- Back-End Engineering: Developed scalable cloud-native APIs and microservices infrastructure

IMAM REZA INTERNATIONAL UNIVERSITY Mashhad, Iran
Instructor Sep 2022 – Aug 2023

Designed and delivered specialized workshops and training programs in artificial intelligence and computer science. Led comprehensive internship courses and technical courses focused on AI implementation.

- 2022, Advance Python Programming
- 2022, Version Control (Git Basic)
- 2023, Basic MATLAB Programming
- 2023, Signal Processing with MATLAB
- 2023, Machine Learning Basic
- 2023, Basic Python Programming
- 2023, Programming with Python

BLUEHEALTH ACCELERATOR Mashhad, Iran
Machine Learning Researcher 2021 – 2023

Research and development of machine learning and computer vision systems across healthcare and industrial domains, with a focus on designing AI-powered diagnostic solutions. Additionally provided specialized consultation to tech startups within the accelerator on implementing and optimizing machine learning models.

- Designed and implemented medical diagnostic systems leveraging computer vision for enhanced clinical decision support
- Developed robust image and video processing algorithms tailored for diverse industrial applications
- Guided and collaborated with portfolio startups on deep learning model design, training, and deployment for platforms

Skills

Language: Persian (Native), English (Limited working proficiency)

Laboratory: Experimental Design, Statistical Analysis, Data Annotation, Data Collection

Technical: Python, C++, MATLAB, C#, TensorFlow, PyTorch, Git, Linux, Qt Framework

Projects

Arada

An intelligent assistant system was developed to provide quick and easy access to organizational knowledge through a conversational interface.

Vorteen

A deep reinforcement learning-based threat assessment framework designed to help autonomous vehicles evaluate and respond to potential threats in dynamic environments.

Astreen

A medical assistant system designed to streamline patient care by summarizing medical records, generating reports, managing prescriptions, and assisting in disease diagnosis and patient care.

Resident Training Management System for Khatam Al-Anbia Hospital

This project was developed to streamline and manage the educational processes of medical residents at Khatam Al-Anbia Hospital. The system provides an integrated platform for registering students, scheduling clinical rotations, organizing and administering exams, and tracking academic progress. Built with a focus on efficiency and scalability, the software enables department heads and coordinators to manage training activities through a centralized interface. Features include automated rotation planning, real-time notifications, secure exam conduction, and performance analytics. This solution significantly enhances the transparency, organization, and quality of the medical residency training process.

ROP Disease Detection using Ensemble Deep Neural Networks

This research-focused project aims to improve the accuracy and reliability of Retinopathy of Prematurity (ROP) diagnosis through the application of ensemble deep learning models. By integrating state-of-the-art convolutional neural networks such as ResNet and Inception, the system leverages multiple feature extractors to enhance diagnostic precision. The training and evaluation of the models were conducted using medical imaging datasets obtained from Khatam Al-Anbia Hospital and Ferdowsi University of Mashhad. The ensemble approach significantly improves generalization and reduces false diagnoses, offering a powerful tool to assist ophthalmologists in early and accurate detection of ROP, ultimately contributing to better clinical outcomes.

Comprehensive Learning Management System

The foundation of such a system is the identification and integration of essential features that streamline and enhance the learning experience. This software solution leverages the powerful capabilities of C# and .NET to create an intuitive, scalable, and efficient platform for educational institutions. The systematic approach employed in this software encompasses a thorough analysis of user interactions, which not only facilitates effective management of learning activities but also contributes to the continuous improvement of educational quality through detailed analytics and feedback mechanisms.

Talent Classification using EEG Signal and Deep Learning

Classifying individuals based on their inherent talents is a significant step towards personal development and improving the quality of life. The prerequisite for this matter is the identification of features that can define talents in various domains. The innovative and reliable strategies employed in this research involve the examination of cognitive factors in individuals, which not only facilitates classification but can also be utilized for analyzing the learning process and subsequently enhancing the quality of education.

Personal Attribute Classification through Body Composition Analysis

This project focuses on developing a classification system to identify and categorize individual characteristics based on body composition analysis. By leveraging advanced techniques in body composition assessment, such as bioelectrical impedance analysis (BIA) or dual-energy X-ray absorptiometry (DEXA), the system aims to extract pertinent features that can be utilized for personalized attribute classification. The objective is to create a robust and efficient classification model capable of categorizing individuals based on various characteristics, such as body fat percentage, muscle mass, and bone density. This classification approach has potential applications in health and fitness assessments, personalized training programs, and overall well-being management.

Access Control System for Personnel Management Based on Face Recognition

In this project, an access management system has been developed utilizing face recognition for the registration of individuals' entries and exits. With high precision, the system determines the access levels based on the analysis of facial features using artificial intelligence algorithms. This system not only enhances security but also empowers managers to optimally utilize organizational resources by effectively managing access levels.

An Investigation into Interactions among Frontal, Central, and Occipital Brain Channels in the Domain of Chaos

Bachelor thesis – Imam Reza International University

Following the acquisition of CQEEG brain signal data, an in-depth exploration was conducted utilizing dynamic changes, derived from chaos domain features such as Correlation Dimension, Fractal Dimension, Lyapunov Exponent, and Trigonometric Plots. This analysis allowed for the identification of distinct patterns among various brain regions associated with neurological disorders, notably ADHD. The project aimed to diagnose and discern abnormalities based on the dynamic alterations observed in the mentioned chaos domain features.

Autism Diagnosis through Brain Signals: A Computational Approach Leveraging EEG Data

This project focuses on the development of a computational framework for the detection of autism spectrum disorder (ASD) based on the analysis of brain signals, particularly utilizing electroencephalogram (EEG) data. By leveraging advanced machine learning algorithms and signal processing techniques, the system aims to identify patterns and abnormalities in EEG signals associated with ASD. The objective is to create a reliable and non-invasive tool for early and accurate diagnosis of autism, offering potential benefits for timely intervention and personalized treatment strategies.

ADHD Diagnosis through Brain Signal Analysis

This project aims to develop an innovative computational framework for the diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) by analyzing brain signals, with a particular focus on electroencephalogram (EEG) data. Leveraging advanced machine learning algorithms and signal processing techniques, the system seeks to identify distinctive patterns and markers associated with ADHD in EEG signals. The ultimate goal is to create a robust and non-invasive tool for the accurate and early diagnosis of ADHD, facilitating improved understanding, intervention, and tailored treatment strategies for individuals affected by this neurodevelopmental disorder.

Estimation of Building Height Using Drone-Captured Data and Deep Learning

In this project, we accurately estimated building heights using data captured by our drones, leveraging the shadows cast by the structures. Employing the PyTorch library, we implemented an ensemble of Resnet networks to create a predictive model.

Automated Brain Tumor Detection and Segmentation Using Deep Learning

This project is designed for the automated detection and segmentation of brain tumors employing advanced imaging techniques and deep learning algorithms. Through artificial intelligence, the system identifies brain tumors in medical images, followed by precise segmentation to extract the tumor boundaries. This innovative approach provides healthcare professionals and researchers with a higher level of accuracy in identifying and studying tumors. Such precision can significantly contribute to early detection and improved treatment strategies for individuals affected by these medical conditions.

Evaluation of Patient's Appearance Based on Facial Expression Analysis

Chest X-Ray Abnormalities Detection

Designed and implemented a robust Chest X-Ray Abnormalities Detection system leveraging advanced deep learning techniques. The project involved extensive preprocessing of medical images, utilizing Convolutional Neural Networks (CNNs) for feature extraction, and training a model to accurately identify abnormalities in chest X-rays.

Chest X-Ray Pneumonia Segmentation

We developed an AI system focusing on Chest X-Ray Pneumonia Segmentation, utilizing state-of-the-art image processing and deep learning techniques.

COVID-19 Detection Using CT-Scan Images

Licenses & Certifications

Reinforcement Learning From Human Feedback
DeepLearning.AI, Google Cloud, Nikita Namjoshi
Tags: Fine-Tuning, Generative Models, LLMOps, Transformers

LangChain for LLM Application Development
DeepLearning.AI, LangChain, Harrison Chase
Tags: Agents, Chatbots, Generative Models, Prompt Engineering, RAG

Multimodal RAG: Chat with Videos
DeepLearning.AI, Intel, Vasudev Lal
Tags: Computer Vision, Embeddings, MultiModal, NLP, RAG, Search and Retrieval, Vector Databases

Building Multimodal Search and RAG
DeepLearning.AI, Weaviate, Sebastian Witalec
Tags: Embeddings, MultiModal, RAG, Search and Retrieval, Vector Databases

Knowledge Graphs for RAG
DeepLearning.AI, Neo4j, Andreas Kollegger
Tags: Embeddings, GenAI Applications, RAG, Search and Retrieval, Vector Databases

Finetuning Large Language Models
DeepLearning.AI, Lamini, Sharon Zhou
Tags: Deep Learning, Fine-Tuning, Transformers

TensorFlow: Advanced Techniques Specialization
DeepLearning.AI, Laurence Moroney

- Custom Models, Layers, and Loss Functions with TensorFlow
- Custom and Distributed Training with TensorFlow
- Advanced Computer Vision with TensorFlow
- Generative Deep Learning with TensorFlow

Machine Learning Engineering for Production Specialization
DeepLearning.AI, Andrew NG

- Introduction to Machine Learning in Production
- Machine Learning Data Lifecycle in Production
- Machine Learning Modeling Pipelines in Production
- Deploying Machine Learning Models in Production

TensorFlow Developer Professional Certificate
DeepLearning.AI, Laurence Moroney

- Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning
- Convolutional Neural Networks in TensorFlow
- Natural Language Processing in TensorFlow
- Sequences, Time Series and Prediction

Deep Learning Specialization
DeepLearning.AI, Andrew NG

- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Convolutional Neural Networks
- Structuring Machine Learning Projects
- Sequence Models

Machine Learning Specialization (2022 Update)
DeepLearning.AI, Stanford Online, Andrew NG

- Supervised Machine Learning: Regression and Classification
- Unsupervised Learning, Recommenders, Reinforcement Learning
- Advanced Learning Algorithms

AI for Medical Imaging
Loop Academy, Ali Sharifi

Introduction to Embedded Machine Learning
Edge Impulse, Shawn Hymel

Intelligent Analysis of Biomedical Imaging Data
Sharif University, Mohammad Hosein Rohban

M/EEG analysis with MNE-Python
PyBrain, Richard Höchenberger

Machine Learning
Stanford Online, Andrew NG

Advanced MATLAB - EEGLAB
Imam Reza International University

Machine Learning with Python
Maktabkhooneh, Jadi Mirmirani

Version Control with Git
Maktabkhooneh, Vahid Naeini

Advanced MATLAB – Image Processing
Ramin Hasani

Advanced Python Programming
Maktabkhooneh, Jadi Mirmirani

Introduction to Programming with MATLAB
Imam Reza International University, Atekeh Goshvarpour