

Emanuele Plebani

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INTRODUCTION

Software engineer with 8+ years of industry and academic experience specializing in full stack development, cloud computing, and machine learning. Proven track record in developing and maintaining large-scale software projects, with 3+ years of development lead experience. Consistently demonstrate the ability to manage demanding workloads, provide key features within strict deadlines, and deliver strategic leadership while mentoring teams.

SKILLS

- Languages:** Python, C/C++, JavaScript, CUDA, Perl, Java
- Tools:** TensorFlow, Keras, PyTorch, ONNX, Docker, Flask, Git
- Expertise:** Software engineering, machine learning, model deployment, language models, statistical modeling, object detection, image segmentation, visual search, 3D reconstruction, SfM

PROFESSIONAL EXPERIENCE

JAN 2026 - PRESENT	Senior Deep Learning Engineer at IMAGRY, San Jose, CA <ul style="list-style-type: none">Development of 3D object detection solutions for autonomous driving
DEC 2024 - JAN 2026	Software Development Engineer II at AMAZON, Santa Clara, CA <ul style="list-style-type: none">Development of new AI-based shopping features for Alexa+, including Shopping Essentials, tracking deals on products and Autobuy based on price conditionsContribute to the design and implementation of LLM-based service APIs and data flows, mapping service dependencies, designing integration and load testsMaintain and improve existing Alexa Shopping features, including deal search and notifications, and integrating them in the new AI-based flowsManaging data pipelines involving relational databases, event-based systems and data transformation stepsMonitoring and improving the service infrastructure through Infrastructure as Code (IaC) on AWS, fixing configuration issues, and improving code quality
MAY 2022 - AUG 2022	Research Scientist Intern at META, Redmond, WA <ul style="list-style-type: none">Developing an uncertainty-aware neural network model for eye tracking in the Aria projectDeveloping out-of-distribution approaches to identify anomalous training sequencesRunning training on the internal cloud platform, integrating code in the main repository and reviewing code changes
JAN 2020 - MAY 2024	Research Assistant at IUPUI, Indianapolis, IN Supervisor: Prof. M. Dundar <ul style="list-style-type: none">Designed and implemented an Android app giving context-based audio suggestions to blind/visually impaired peopleClassification of mineral signatures in hyperspectral images from the CRISM Mars experiment using Bayesian models, improved speed by optimizing hot spots and parallelizing executionSegmentation of different cell and nerve structures in neurohistological TEM images using U-Net and an ensemble of multi-scale modelsData visualization for graphs and tabular data in D3 (JavaScript)Implementation of semi-supervised segmentation methods based on CNN and Transformers in PyTorchImplementation of deep open-world models for fine-grained class discoveryAutomated tagging and summarization of medical notes using recurrent neural networks and Transformer language models

JUN 2014 -
JAN 2020

Advanced Research Engineer at STMICROELECTRONICS, Milan

- Initial design and development of the Cube.AI back-end, a tool to port neural networks from different deep learning toolboxes and ONNX to STMicroelectronics microcontroller platforms
- Optimizing memory and execution speed of neural nets on microcontrollers, with patents covering the algorithms
- Technical leadership and team coordination in the Cube.AI project, involving up to 30 people and 5 locations across Italy and France
- API design and setup of a container-based web service to demo the Cube.AI app internally and to customers
- Development of deep learning solutions for sensor data classification and activity recognition on microcontrollers, handling the full data pipeline including data collection, cleaning, training, and field evaluation
- Developing an Android application for the collection of datasets from sensor data via Bluetooth and automated the data-cleaning step
- Development, implementation in C++ and optimization of computer vision algorithms for visual search and object detection

OCT 2011 -
MAY 2014

Research Assistant at POLITECNICO DI MILANO, Milan

- Development and implementation of content-based image retrieval algorithms for the MPEG CDVS standard
- Development of visual search algorithms with improved localization, multiple object search, and continuous tracking
- Person in charge of the deliverables assigned to Politecnico di Milano in the European Project ASTUTE ARTEMIS
- Advised theses on visual odometry using the trifocal tensor on omnidirectional images and robust plane detection in point clouds

EDUCATION

MAY 2024 **Ph.D. in Computer Science**, Purdue University
GPA: 4.0/4.0 | Advisor: Prof. Murat M. Dundar

JUL 2011 **M.S. in Computer Science Engineering**, Politecnico di Milano, Milan
Grade: 100/100 with First Class Honors | Major: Engineering of Computing Systems

SELECTED PUBLICATIONS & PATENTS

- E. Plebani**, N. Biscola, L. Hayton, B. Rajwa *et al.*, “High-throughput segmentation of unmyelinated axons by deep learning,” *Scientific Reports* 12, no. 1 (2022): 1198.
- E. Plebani**, B. L. Ehlmann, E. K. Leask, V. K. Fox, and M. M. Dundar, “A Machine Learning Toolkit for CRISM Image Analysis,” *Icarus* 376 (2022): 114849.
- L. Folliot, **E. Plebani**, and M. Falchetto, “Device and method for allocating intermediate data from an artificial neural network,” 2023, US Patent 11,609,851.
- P. Karimi, **E. Plebani**, D. Bolchini, “Textflow: Screenless access to non-visual smart messaging,” In *26th International Conference on Intelligent User Interfaces*, pp. 186-196, 2021.
- M. Paracchini, **E. Plebani**, M.B. Iche, D. Pau and M. Marcon, “Embedded real-time visual search with visual distance estimation,” *Image Analysis and Processing-ICIAP*, September 11-15, 2017.
- A. Nicosia, D. Pau, D. Giacalone, **E. Plebani**, A. Bosco, A. Iacchetti, “Efficient light harvesting for accurate neural classification of human activities,” *ICCE*, 2018, pp. 1-4.
- R. Varenne, J. M. Delorme, **E. Plebani**, D. Pau, V. Tomaselli, “Intelligent recognition of tcp intrusions for embedded micro-controllers,” *New Trends in Image Analysis and Processing-ICIAP*, September 9-10, 2019.
- D. Tomè, L. Bondi, **E. Plebani**, L. Baroffio, D. Pau, S. Tubaro, “Reduced Memory Region Based Deep Convolutional Neural Network Detection,” arXiv:1609.02500, 2016.

AWARDS & HONORS

- APR 2024 Gersting’s Award for Outstanding Graduate Student - Purdue University
FEB 2014 Best Demo Prize - GITTI MMSP Conference (IEEE Signal Processing)