

Monica Gruosso

Ph.D., Deep Learning and Software Engineer

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SHORT BIO

Experience in research and analysis of the state-of-the-art, requirements and data collection, software design and implementation based on both traditional and deep learning techniques, testing, debugging, and production of documentation.

WORKING EXPERIENCE

Software Engineer

e-Novia S.p.A.

NOVEMBER 2021 - now

As part of the software team of e-Novia, I support both startups of e-Novia group and external clients in different sectors. I deal with different projects and technologies:

- innovation and R&D
- image analysis based on deep learning techniques
- autonomous driving vehicles

Skills: C++, ROS, Qt/QML, C#, Python, TensorFlow, Visual Studio, VS Code, mongoDB, MQTT, BusMaster, C++/C, bash, Nvidia boards, Raspberry pi, Ubuntu, Windows, git, BitBucket, confluence, anaconda

EDUCATION

Ph.D. in Mathematics and Computer Science

University of Basilicata (in consortium with University of Salento)

NOVEMBER 2018 - NOVEMBER 2021

Human Segmentation with Deep Convolutional Neural Networks (grade: excellent)

Master's Degree in Computer Engineering and Information Technologies (LM-32)

University of Basilicata

AUGUST 2015 - JULY 2018

Deep Learning for the Chroma Key simulation (Graduated with honors)

Bachelor's Degree in Computer Sciences and Technologies (L-31)

University of Basilicata

AUGUST 2011 - JUNE 2015

Statistical photography - statistical approach to background subtraction (Graduated with honors)

OTHER COURSES

Course on DLgs 231/2001

e-Novia S.p.A.

NOVEMBER 2022

Introduction to Legislative Decree 231/2001; General concepts and related offenses; The organizational model: approach and application; Focus on the latest regulatory changes introduced in crime families; Practical application in e-Novia

Corporate security course (Decree 81)

e-Novia S.p.A.

MARCH 2022

Training Course “24 CFU”

University of Basilicata

JUNE 2021 - JULY 2021

Cultural Anthropology, Special Pedagogy and Didactics, General Pedagogy, General Psychology

Cisco CCNA Routing & Switching

University of Basilicata

2015 - 2016

Courses organized by Cisco Networking Academy

LANGUAGES

Italian: Mother tongue

English: Professional knowledge

Spanish: Limited working knowledge

DIGITAL SKILLS

General knowledge: Procedural and object-oriented programming; Android programming; 3D graphics (basic level); Client-server programming (basic level); Refactoring and regression testing; Network infrastructure, networking, and troubleshooting; Deep Learning; MVC and design pattern; Databases and object-relational DBMS (e.g., PostgreSQL)

Programming languages: Java; MATLAB; Python; C/C++; C#; Basic; Javascript; Kotlin

Applications and software: Microsoft Office; NetBeans; MATLAB; Android Studio; Cisco Packet Tracer; PostgreSQL; Sql Server Management Studio; Microsoft Visual Studio; Visual Studio Code; C++

Framework and libraries: TensorFlow; Keras; Caffe; Java Server Faces; Hibernate; JUnit; jQuery; OpenCV; NumPy; Matplotlib; ROS; Qt/QML

Markup languages and file formats: JSON; LaTeX; Markdeep/Markdown; HTML; CSS; XML; bash

Code versioning: git; GitHub; BitBucket

Operating systems: Windows; Ubuntu (desktop, Nvidia boards, Raspberry); Android

CMS: WordPress

PERSONAL, ORGANIZATIONAL, AND RELATIONAL SKILLS

Independence: Self-management and autonomous definition of deadlines and tasks.

Planning: Ability to draw up detailed activity plans to be carried out daily and coordinated with colleagues, punctuality, and compliance with deadlines.

Problem-solving: Ability to analyze and decompose complex problems, looking for correlations between objects, identifying critical issues and possible solutions.

Stress resistance: Ability to react to stressful situations, trying to face everything with calm and rationality, staying focused on priorities, and avoiding transmitting anxieties to others.

Team working: Ability to work productively and in harmony with colleagues, exchanging ideas and managing any conflicts, respecting different people and points of view thanks to open-mindedness and empathy.

Communication: Excellent written and verbal communication skills acquired in multiple languages, which allow good listening skills, personal re-elaboration of contents, clear exposure, public speaking, and writing correct and easy-to-read texts.

Precision: Attention to detail and ability to maintain a high level of concentration.

Flexibility: Management of different situations and ability to adapt to change, reorganizing work and priorities.

Research: Ability to search for solutions, critical thinking, and the desire to investigate and improve oneself.

PUBLICATIONS

- M. Sileo, N. Capece, M. Gruosso, M. Nigro, D. Bloisi, F. Pierri, and U. Erra, "[Vision-enhanced Peg-in-Hole for Automotive Body Parts using Semantic Image Segmentation and Object Detection](#)", *Engineering Applications of Artificial Intelligence*, 2024
- G. Manfredi, N. Capece, U. Erra, and M. Gruosso, "[TreeSketchNet: From Sketch To 3D Tree Parameters Generation](#)", *ACM Transactions on Intelligent Systems and Technology*, 2023
- M. Gruosso, N. Capece, and U. Erra, "[Egocentric Upper Limb Segmentation in Unconstrained Real-Life Scenarios](#)," *Virtual Reality*, 2022
- M. Gruosso, N. Capece, and U. Erra, "[Solid and Effective Upper Limb Segmentation in Egocentric Vision](#)," in *2021 ACM 26th International Conference on 3D Web Technology (WEB3D)*
- M. Gruosso, N. Capece, and U. Erra, "[Exploring Upper Limb Segmentation with Deep Learning for Augmented Virtuality](#)," in *2021 Smart Tools and Applications in Graphics Annual International Conference (STAG)*
- N. Capece, M. Gruosso, U. Erra, R. Catena, and G. Manfredi, "[A Preliminary Investigation on a Multimodal Controller and Freehand based Interaction in Virtual Reality](#)," in 2021

International Conference on Augmented Reality, Virtual Reality and Computer Graphics (AVR)

- M. Gruosso, N. Capece, U. Erra, and F. Biancospino, "[A Validation Approach for Deep Reinforcement Learning of a Robotic Arm in a 3D Simulated Environment](#)," in *2021 IEEE 19th World Symposium on Applied Machine Intelligence and Informatics (SAMI)*
- M. Gruosso, N. Capece, U. Erra, F. Angiolillo, "[A Preliminary Investigation into a Deep Learning Implementation for Hand Tracking on Mobile Devices](#)," in *2020 IEEE International Conference on Artificial Intelligence and Virtual Reality (AIVR)*
- N. Capece, U. Erra, M. Gruosso, and M. Anastasio, "[Archaeo Puzzle: An Educational Game Using Natural UserInterface for Historical Artifacts](#)," in *2020 18th Eurographics Workshop on Graphics and Cultural Heritage (EG GCH2020)*, November 18-19, 2020
- M. Gruosso, N. Capece, and U. Erra, "[Human Segmentation in Surveillance Video with Deep Learning](#)," *Multimedia Tools and Applications*, 2020
- M. Gruosso, N. Capece, U. Erra, and N. Lopardo, "[A Deep Learning approach for the Motion Picture Content Rating](#)," in *2019 10th IEEE International Conference on Cognitive Infocommunications (CogInfoCom)*, Naples, Italy, pp. 137-142, 2019

PREPRINTS

- N. Capece, U. Erra, D. Malandrino, M. M. North, and M. Gruosso, "[Evaluation of Virtual Reality Interaction Techniques for 3D Graph Exploration](#)"

HONORS AND AWARDS

- **Best Presentation Award**, 3rd IEEE International Conference on Artificial Intelligence and Virtual Reality, 2020
- **Best Paper Award**, 10th IEEE International Conference of Cognitive Infocommunications, 2019
- **2nd place for Ph.D. students of Leonardo Innovation Award 2018**, 2018

CONFERENCES AND SEMINARS

- 26th International Conference on 3D Web Technology (WEB3D), 11/8/2021 - 11/12/2021, online event
- Annual International Conference "Smart Tools and Applications in Graphics" (STAG), 10/28/2021 - 10/29/2021, online event
- Guest Lecture: Image Processing using Convolutional Neural Networks, 28/09/2021, Sam Ratulangi University, Manado, Indonesia (online event)
- 19th IEEE World Symposium on Applied Machine Intelligence and Informatics (SAMI 2021), 01/21/2021 - 01/23/2021, online event
- 3rd IEEE International Conference on Artificial Intelligence and Virtual Reality (AIVR 2020), 12/14/2020 - 12/18/2020, online event
- Seminar entitled "Convolutional neural networks for image analysis", 01/15/2020, University of Basilicata, Potenza, Italy

- 10th IEEE International Conference on Cognitive Infocommunications (CogInfoCom 2019), 10/23/2019 - 10/25/2019, Naples, Italy
- 2nd Advanced Course on Data Science & Machine Learning (ACDL 2019), 07/15/2019 - 07/19/2019, Certosa di Pontignano (Siena), Italy
- Deep Learning for Artificial and Physical Intelligence, 06/28/2019, IIASS, Vietri sul Mare (SA), Italy

CERTIFICATIONS

- "Kotlin for Java Developers" on Coursera, 01/10/2024
- "DeepLearning.AI TensorFlow Developer", a 5-course specialization by deeplearning.ai on Coursera, 11/08/2022. It also includes the certificates for the following five courses: 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.
- Certified Publons Academy Peer Reviewer, 03/02/2021
- "Inferential Statistics" by the Duke University on Coursera, 07/05/2019
- "Open Source tools for Data Science" by IBM on Coursera, 03/03/2019
- "Data Visualization with Python" by IBM on Coursera, 03/02/2019
- "Data Analysis with Python" by IBM on Coursera, 03/02/2019
- "Python for Data Science" by IBM on Coursera, 03/02/2019
- "Deep Learning", a 5-course specialization by deeplearning.ai on Coursera, 02/13/2019. It also includes the certificates for the following five courses: Neural Network and Deep Learning; Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization; Structuring Machine Learning Projects; Convolutional Neural Networks; Sequence Models
- "Deep Learning Onramp" by Mathworks, 01/19/2018

TEACHING ACTIVITY

Lessons

- Procedural programming and problem-solving integrative lessons, "P. P. Pasolini" Scientific High School, Potenza, Italy, 2019-2020
- Laboratory lessons at the Algorithms and Data Structures course, University of Basilicata, Potenza, Italy, 2019-2020

Co-supervisor of degree thesis

- Bachelor's Thesis in Computer Science and Technologies, "Study of the WebRTC protocol for the development of a P2P webchat", 2021
- Bachelor's Thesis in Computer Science and Technologies, "Development of a hand tracking system based on an RGB camera", 2021
- Master's Thesis in Computer Engineering and Information Technologies, "Analysis, Study, and Migration in Android of a Convolutional Neural Network for real-time hand tracking", 2020
- Bachelor's Thesis in Computer Science and Technologies, "Gender classification in real-time through Neural Network", 2019

- Bachelor's Thesis in Computer Science and Technologies, "Deep Learning for the training of a robotic manipulator in a simulated environment", 2019
- Bachelor's Thesis in Computer Science and Technologies, "Violence Detection with the use of Deep Learning", 2019

AUTHORIZATION FOR THE TREATMENT OF PERSONAL DATA

I hereby authorize the use of my personal data under the GDPR 679/16 - "European regulation on the protection of personal data".