



Gianluca Amprimo

PH.D. CANDIDATE IN COMPUTER ENGINEERING · RESEARCH FELLOW

Politecnico di Torino, Italy

Italian National Research Council (CNR-IEIT)

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Summary

I am currently a PostDoc researcher in Computer Engineering at Politecnico di Torino, Italy, where I obtained my Ph.D. title in April 2025. I work in the domain of digital medicine, in particular using human pose and hand pose estimation methods based on Computer Vision and Deep Learning, as well as Machine Learning, for the monitoring, the assessment and rehabilitation of motor symptoms due to Parkinson's disease. My research work was driven towards employing low-cost and pervasive technologies to implement continuity of care, in a multidisciplinary scenario involving stakeholders from different backgrounds, including software companies, clinicians and patients.

Employment positions

Politecnico di Torino, Italy

Turin, Italy

RESEARCH FELLOW

December 2024 - Present

Key research areas: Deep Learning and Machine Learning for health, Telemonitoring

Description: Digital biomarkers of neurodegeneration using motion data from camera-based systems and physiological wearable monitoring.

Skills: Computer vision, Deep learning, Human Pose Estimation, Multimodal learning

Turin, Italy

TEACHING ASSISTANT

January 2023 - Present

Course Name: Object Oriented Programming

Description: Teaching Java and Object Oriented Programming in the Bachelor's degree in Computer Engineering

(200-300 students per class, English language). Approximately 40-50 hours per semester, including theory, practice and laboratory lectures.

Skills: Teaching, Course management, Object Oriented Programming, Java, Software Engineering

Turin, Italy

TEACHING ASSISTANT

Present

Course Name: Artificial Intelligence in Medicine

Description: Teaching Machine Learning and Deep Learning approaches for medical applications in the Master's degree in Computer Engineering (50-60 students per class, English language). Approximately 10 hours of hands-on laboratories.

Skills: Teaching, Course management, Object Oriented Programming, Java, Software Engineering, Git

CNR - Institute of Electronics, Information Engineering and Telecommunications

Turin, Italy

RESEARCH FELLOW

January 2021 - December 2024

Key research areas: Telemedicine and Digital Health for Parkinson's disease

Description: Implementing digital medicine solutions for monitoring and rehabilitation of Parkinson's disease using lowcost camera systems, AI and gamification

Skills: Machine Learning, Video-based human pose estimation and hand pose estimation, Computer Vision, Biomechanics of human motion, Clinical data processing, Statistics

Education

Politecnico di Torino, Italy

Turin, Italy

PH.D. IN COMPUTER AND CONTROL ENGINEERING

October 2021 - April 2025

Key research areas: Computer vision for Human Pose Estimation and Hand Tracking,

Machine Learning and Deep Learning, Telemedicine, Telerehabilitation, Human-Computer Interaction

Title of the thesis: Video-based, AI-powered approaches to motor function characterization and rehabilitation

Advisor: Prof. Gabriella Olmo

Politecnico di Torino, Italy

Turin, Italy

M.S. IN COMPUTER ENGINEERING

October 2018 - October 2020

Degree: LM-32 - Master Degree in Computer Science and Engineering

Main Courses: System Programming, Data Science, Bioinformatics, Machine and Deep Learning, Big Data Management (Hadoop & Spark), Cybersecurity, Software Engineering

Title of the thesis: Freezing of gait in Parkinson's disease: automatic early recognition of episodes from patient's inertial data

Supervisor: Prof. Gabriella Olmo

Grade: 110/110 cum laude

Skills

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|------------------------------|---|
| Programming languages | Python, Java, C, C++, Matlab, SQL, C# |
| ML and DL Libraries | Scikit-learn, Torch, Tensorflow, Hyperopt, Hugging-face, Weight&Biases |
| OS and Tools | Ubuntu, Windows, macOS, Git, Unity, Containerization (Singularity), Motion capture software, Microsoft Office |
| Soft skills | Project management, mentorship, leadership, flexibility, public speaking, data visualization and presentation |

Competitions

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| 2022 | Global Student Competition , Honorary Award at IEEE ICDH Conference 2022 for: "ReHandER: A Platform for Remote Hand Enhanced Rehabilitation" | <i>Barcelona, Spain</i> |
| 2023 | Best Poster Award , For my Poster: "Vision-based, AI-powered approaches to motor function assessment and rehabilitation" at the TCRT Summer School 2023 | <i>Brissago, Switzerland</i> |
| 2024/25 | PhD Quality Award (1st place) , Assigned for the best 2nd year of PhD among students of the XXXVII Cycle of the PhD in Control and Computer Engineering of Politecnico di Torino | <i>Torino, Italy</i> |

Visiting experiences

Institute for Biomechanics, Laboratory for Movement Biomechanics, ETH Zürich

Gloriastrasse 37/39 8092 Zürich, Switzerland

VISITING PH.D. STUDENT

November 2023 - March 2024

Supervisors: Prof. Dr. William R. Taylor & Dr. Deepak Ravi, PhD.

Description: This visiting period was focused on the investigation and the automatic prediction of effects of Deep Brain stimulation on Parkinson's gait using machine learning algorithms. The period was concluded with the publication of a journal article [J5].

Skills: Biomechanics, Human Gait, Machine Learning, Neuroscience

Peer-reviewed scientific articles (Extract)

JOURNALS

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|-----------|---|---------------|
| 2022 [J1] | Amprimo G., Masi G., Priano L., Azzaro C., Galli F., Pettiti G., Mauro A., Ferraris C. , Assessment tasks and virtual exergames for remote monitoring of Parkinson's disease: An integrated approach based on Azure Kinect. MDPI Sensors. 2022 | <i>Online</i> |
| 2023 [J2] | Amprimo G., Irene R., Claudia F., Olmo G. , Measuring Brain Activation Patterns from Raw Single-Channel EEG during Exergaming: A Pilot Study. MDPI Electronics. 2023 | <i>Online</i> |
| 2023 [J3] | Amprimo G., Masi G., Olmo G., Claudia F. , Deep Learning for Handtracking In Parkinson's Disease Video-based Assessment: Current and Future Perspectives. Elsevier Artificial Intelligence in Medicine. 2024 | <i>Online</i> |
| 2024 [J4] | Amprimo G., Masi G., Pettiti G., Olmo G., Claudia F. , Hand tracking for clinical applications: validation of the Google MediaPipe Hand (GMH) and the depth-enhanced GMH-D frameworks. Elsevier Biomedical Signal Processing and Control. 2024 | <i>Online</i> |
| 2024 [J5] | Amprimo G., Mei Z., Olmo G., Claudia F., Ravi D. , A Data-driven Exploration and Prediction of Deep Brain Stimulation Effects on Gait in Parkinson's Disease. IEEE Journal of Biomedical and Health Informatics. 2024 | <i>Online</i> |

CONFERENCES

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|-----------|---|-------------------------|
| 2022 [C1] | Amprimo G., Ferraris C., Masi G., Pettiti G., Priano L. , GMH-D: Combining google mediapipe and rgb-depth cameras for hand motor skills remote assessment. In 2022 IEEE International Conference on Digital Health (ICDH) | <i>Barcelona, Spain</i> |
| 2023 [C2] | Amprimo G., Rechichi I., Ferraris C., Olmo G. , Objective Assessment of the Finger Tapping Task in Parkinson's Disease and Control Subjects using Azure Kinect and Machine Learning. In 2023 IEEE International Symposium on Computer-Based Medical Systems (CBMS) | <i>L'Aquila, Italy</i> |
| 2024 [C3] | Amprimo G., Masi G., Ferraris C., Olmo G. , Enhancing Model Generalizability In Parkinson's Disease Automatic Assessment: A Semi-Supervised Approach Across Independent Experiments. In 2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) | <i>Orlando, Florida</i> |

Language Skills

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| Italian | Native |
| English | Professional Proficiency |
| Japanese | Limited Working Proficiency |