Francesco Ciccone

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Professional Experience

PhD Researcher, University of Bologna

Jenuary 2022 – December 2024

- **Project**: Developed an AI-based aerial monitoring system for search and rescue, landslide damage assessment, and wildfire detection. This system operates on real-time aerial platforms and integrates object detection and segmentation models to georeference critical objects.
- **Key Contributions**: Created a lightweight person-detection model (YOLOv8s) achieving 80.2% accuracy on aerial images, optimized for real-time on-edge deployment.
- **Technical Skills**: Jetson Nano, Coral Dev Board, PyTorch, Git, Linux/WSL2.

Aerospace Researcher, German Aerospace Center (DLR) – Braunschweig – Department of Flight Systems

June 2024 – October 2024

- **Project**: Developed a georeferencing system to calculate GPS coordinates for detected objects in real time using YOLO, enhancing drone-based situational awareness.
- **Collaboration**: Worked within a multidisciplinary team, coordinating with the project repository lead to integrate my system.
- **Technologies**: Proficient in ROS for data handling from drone-mounted cameras and Git for collaborative codebase management.
- **Outcome**: Delivered a fully functional georeferencing system within the project timeline, successfully completing initial flight tests.

Education

"Deep Learning Applications" course April 2021
IFOA-Reggio Emilia
Detailed knowledge of design of deep neural networks for computer vision, NLP, time series.

"Predictive Analysis and IoT" course March 2021
ASSOFORM-Romagna
Knowledge of advanced algorithms to model, transform and organize data to elaborate accurate reports.

State Examination for Admission to the Profession of Engineer A November 2020
University of Bologna, Italy

M.Sc. in Aerospace Engineering October 2020
University of Bologna, Italy
Thesis: *Dynamic system model identification of inertial sensors by means of neural networks*

"Machine Learning" course July 2020
Coursera
Knowledge of machine learning techniques: logistic and linear regression, K-Means, KNN, Clustering, PCA, neural networks. Acquired capacity of design machine learning models to be implemented according to the data available.

B.Sc. in Aerospace Engineering October 2017
University of Bologna, Italy

Skills

Languages: Italian (Native), English (B2)
Technical Skills: Python, TensorFlow, PyTorch, Scikit-Learn, ROS2, Deep Learning, SolidWorks, MATLAB, Git, Linux, WSL2

Core Competencies: Object Detection, Object Segmentation, Neural Networks, Machine Learning, Data Science, 3D CAD Design

Publications

1. Ciccone F.; Ceruti A., "From Dataset to Detections: Enhancing Yolo for Search and Rescue Applications," in: *Engineering Applications of Artificial Intelligence*, Elsevier. [Currently Under Review].

2. Ciccone F.; Ceruti A.; Bacciaglia A.; Meisina C., "Automating Landslips Segmentation for Damage Assessment: a Comparison Between Deep Learning and Classical Models," Best Paper Award Winner, in: *Lecture Notes in Mechanical Engineering*, Springer Science and Business Media Deutschland GmbH, 2024, pp. 91 - 99. [International Conference of the Italian Association of Design Methods and Tools for Industrial Engineering].

3. Bacciaglia A.; Ceruti A.; Ciccone F.; Liverani A., "FDM Printing Time Prediction Tuning Through a DOE Approach," in: *Lecture Notes in Mechanical Engineering*, Springer Science and Business Media Deutschland GmbH, 2024, pp. 3 - 12. [International Conference of the Italian Association of Design Methods and Tools for Industrial Engineering].

4. Ciccone F.; Bacciaglia A.; Ceruti A., "Optimization with artificial intelligence in additive manufacturing: a systematic review," *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 2023, 45, Article number: 303, pp. 1 - 22.

5. Ciccone F.; Bacciaglia A.; Ceruti A., "Methodology for Image Analysis in Airborne Search and Rescue Operations," in: *Lecture Notes in Mechanical Engineering*, Springer Science and Business Media Deutschland GmbH, 2023, pp. 815 - 826. [International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing, JCM 2022].

6. Bacciaglia A.; Ceruti A.; Ciccone F.; Liverani A., "Topology Optimization for Thin-Walled Structures with Distributed Loads," in: *Lecture Notes in Mechanical Engineering*, Springer Science and Business Media Deutschland GmbH, 2023, pp. 1042 - 1054. [JCM 2022, Ischia, Italy].

Data Authorization

I hereby authorize the processing of my personal data included in my application for the purposes of recruitment and selection, in accordance with applicable data protection laws.

Forlì, December 15, 2024
Francesco Ciccone