Emanuele Vivoli

PhD student at MICC
Researcher at University of Florence, NATO SPS
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PRINCIPAL INTERESTS

PhD topics: Multimodal learning (Vision and Language), scene-text VQA, GNN for Documents Analysis, end-to-end systems;
Other research topics: Multi-sensory data, Ground penetration radar, buried mine detection, anomaly detection, demining robots.

ACADEMIC BACKGROUND

Ph.D. in Multimodal Learning — Nov. 2022 – Present
MICC - Smart Computing, Florence, Italy

- Won 2 scholarships as 1st place among students from Florence, Siena and Pisa
- Research on: Vision and Language, GNN for Documents, scene-text VQA, Hateful memes, [and more] - under direction of prof. Marco Bertini

M.Sc. Computer Engineering [**110/110 with honours**] — Dec. 2018 – Jul. 2021
University of Florence, AILab-Unifi, Florence (Italy) — GPA: **29.375/30**

- Thesis on: "Semantic understanding of scientific papers"

B.A. Computer Engineering [**110/110 with honours**] — Sep. 2015 – Dec. 2018
University of Florence, AILab-Unifi, Florence (Italy) — GPA: **28.407/30**

- Thesis on: "Handwriting Recognition and Classification"

EMPLOYMENT HISTORY

Researcher and Teaching Assistant
University of Florence, NATO SPS, Florence, Italy — Jul. 2022 – Present

- Key words: self-navigating robot; holographic radars; buried land-mines
- Main tasks: dataset creation; classification; anomaly detection; prototyping

Computer Vision Center, Barcelona, Spain — Apr. 2022 – Jul. 2022

- Defined task of Multilingual scene-text VQA. Conversion of ST-VQA models for multilingual. Created multilingual (5+ lang) dataset
- Frameworks: mmf (facebook), transformers (huggingface)

University of Florence, Florence, Italy — Aug. 2021 – Mar. 2022

- Speeded up paper code of x7.5 by refactoring (data pre-processing and training)
- Passed Bar Exam for Engineering obtaining Italian title of Engineer

University of Technology, EISLAB, Luleå, Sweeden — Jun. 2019 – Aug. 2019

- Found bug and fixed paper code on EEG Motor Imagery Classification
- Taught workshops on "git and vscode for remote programming" and "web services with Angular2+"

University of Florence, Florence, Italy — Jan. 2019 – Feb. 2019

- Tutor experience working with 20+ High school students and 3 other tutors
- Designed 2 weeks of frontal and interactive lessons on python, jupyter notebooks, opencv using machine learning (SVM, MLP, decision trees)

Software Engineer
Multiple companies (freelancer), Florence, Italy Feb. 2017– Dec. 2021

- Developed 3 Web applications for real-time data management (i.e. doctor appointments and receipts)
- Supported 80 doctors, 1500 patients each with low latency and real-time updates, in Angular2+ and GCP, with no-SQL database.

CONFERENCE ARTICLES

See also my google scholar page.

4. A. Gemelli, **Emanuele Vivoli**, S. Marinai, CTE: A Dataset for Contextualized Table Extraction, *IRCDL Proceedings*, Bari - Italy, 2023 arXiv
3. **Emanuele Vivoli**, A.F. Biten, R. Tito, A. Mafla, D. Karatzas, L. Bigorda, MUST-VQA: on MUltilingual approaches for Scene-text and Text VQA, *ECCV Proceedings*, Tel Aviv - Israel, 2022 arXiv
2. A. Gemelli, **Emanuele Vivoli**, S. Marinai, Graph Neural Networks and Representation Embedding for Table Extraction in PDF Document, *ICPR Proceedings*, Montréal - Québec, 2022 arXiv
1. **Emanuele Vivoli**, L. Bossi, M. Bertini, P. Falorni, L. Capineri, Error assessment of microwave holography inversion for shallow buried objects, *IWA-GPR*, Lisbon - Portugal, 2023

Refereed Publications

(ICPR) International Conference on Pattern Recognition, (ECCV) European Conference on Computer Vision, (IRCDL) Information and Research science Connecting to Digital and Library science, (IWA-GPR) International Workshop on Advanced Ground Penetrating Radar

UNDER REVIEW

2. **Emanuele Vivoli**, A. Gemelli, S. Marinai, Supporting Dysgraphia Diagnosis by Analyzing Smart Pen Handwritings, *under review*, tba
1. **Emanuele Vivoli**, L. Bossi, L. Capineri, M. Bertini, LD2: Landmine Detection Dataset for shallow buried objects, *under review*, tba