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Elena Camuffo

Research and development experience in AI, ranging from scene understanding acquired during my Ph.D. and development of on-device efficient solutions at Samsung to Computer Graphics skills developed during my job experience at Uqido. My research achievements include 8+ research publications in international conferences and journals, 2+ master's thesis supervision.

Last Update: March 15, 2024.

Work Experience

Apr. 2023– Present **Intern AI Researcher**, *Samsung Research*, UK
Efficient Object Recognition Models. Supervisor: Dr Mete Ozay.
- Improved existing algorithms in the presence of corrupted images by $\approx 10\%$ in terms of accuracy via selective normalization parameters, preserving original accuracy and efficiency.
- Improved existing algorithms in personalized object detection by developing a DEMO.
- Published 1 paper.

Sep. 2019– Present **Teaching Assistant**, *University of Padova*, Italy
- 3D Augmented Reality (A.Y. 20/21, 21/22, 22/23, 23/24) M.Sc. course.
- Digital Forensics (A.Y. 20/21) M.Sc. course.
- Digital and Interactive Multimedia (A.Y. 21/22) M.Sc. course.
- Usability and User Experience (A.Y. 21/22) M.Sc. course.

Sep. 2022– Dec. 2022 **Unity3D C# Developer**, *Uqido Srl*, Padova, Italy
Development of an interactive VR experience for Oculus Quest 2 platform. Collaboration with the Department of Pharmaceutical Sciences (University of Padova).

Education

Sep. 2021 – Present **Ph.D. in Information Engineering**, *University of Padova*, Italy
Research topic: "Advanced Learning Strategies for Multi-Modal Visual Scene Understanding". Supervisor: Prof. Simone Milani.
- Published first-authored papers at prestigious venues (TMM, ICASSP, ICIP).
- Collaborated with other Ph.D. students.
- Mentored B.Sc. and M.Sc. final projects.

Seasonal Schools, *GTTI2022, ICVSS2022, GTTI2021, AIRONE2021.*

Sep. 2019 – Sep. 2021 **M.Sc. in Telecommunication Engineering**, *University of Padova*, Italy
Grade: 110/110 summa cum laude
Thesis: "Curriculum and Contrastive learning in LiDAR Semantic Segmentation", supervised by Prof. Simone Milani and Dr. Umberto Michieli.

Sep. 2016 – Sep. 2019 **B.Sc. in Information Engineering**, *University of Padova*, Italy, Grade: 102/110
Thesis: "Mixed Reality Applications in Medical Therapy", Collaboration with Hannah Luxenberg Tono, Tactic Srl and Dreamship Studios Srl (USA).

Sep. 2011 – Sep. 2016 **High School**, *Liceo Scientifico Berto*, Italy, Grade: 93/100
- Selected to be part of the Olympics Maths team – Admission to the national final phase competition, Cesenatico, 2015.
- Part of the Theatre group – Selected for an exchange program with Vibo Valentia High School.
- Awarded scholarship grant, ARCA, 2016.

Academic Experience

Reviewer Activity

- *Journals:* IEEE TIP, TMM, TITS, RAL.
- *Conferences:* IEEE ICASSP, ICIP.

Invited Talks

- 02/24 FFT-based selection and optimization of statistics for robust recognition of severely corrupted images. - Samsung Research Institute, Staines Upon Thames, London, UK.
- 03/23 Introduction to Extended Realty - ITIS Barsanti of Castelfranco V.to.
- 02/23 Learning Strategies for 2D-3D semantic segmentation - Deep Learning Ph.D. course, Univ. of Padova.
- 12/22 Learning Strategies for 3D semantic segmentation - DEITalks series, Univ. of Padova.
- 01/22 Introduction to Extended Realty - IIS Veronese-Marconi of Chioggia.

Projects and Awards

Awards

2021 Best student presentation award at APCCAS International Conference.

2021 Selected and awarded scholarship grant from the organizers of Seasonal School AIRONE, Scuola Superiore S.Anna, Pisa.

Projects

2023 Samsung Promotional Video – Selected as actress for promotional video.

2022 DEITalks – Organizer and Speaker, University of Padova invited talk series.

2020 It's girls' DEI – Organizer and Speaker, Unversity of Padova promotional video.

Skills

Computer Skills

- **Programming:** Python, MATLAB, C#, C/C++ (also experience in Java, JavaScript, HTML, PostgreSQL).
- **Libraries:** PyTorch, Tensorflow, Keras, Scikit-learn, Jupyter Notebooks, Pandas, OpenCV, OpenGL, ROS.
- **Software development:** Bash, Batch, Git, Pycharm, VSCode.
- **Computer Graphics:** Unity3D, Blender (also experience in ZBrush, Maya, Gimp, Photoshop).
- **Typesetting:** LaTeX.

Other Skills

- **Soft Skills:** Public speaking, teamwork, mentoring and coaching, self-organization.
- **Languages:** Italian (native), English (fluent, B2 Trinity College certification), French (basic).

Publications

Conferences

[C1] Elena Camuffo, Umberto Michieli, Ji Joong Moon, Daehyun Kim, and Mete Ozay. Fft-based selection and optimization of statistics for robust recognition of severely corrupted images. In *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, 2023.

[C2] Campagnolo Devid*, Camuffo Elena*, Michieli Umberto, Borin Paolo, Milani Simone, and Giordano Andrea. Fully automated scan-to-bim via point cloud instance segmentation. In *International Conference on Image Processing (ICIP)*. IEEE, 2023.

[C3] Elena Camuffo and Simone Milani. Continual learning for lidar semantic segmentation: Class-incremental and coarse-to-fine strategies on sparse data. In *International Conference of Computer Vision and Pattern Recognition Workshops (CVPRW)*. IEEE, 2023.

[C4] Elena Camuffo, Federica Battisti, Francesco Pham, and Simone Milani. Deep 3d model

optimization for immersive and interactive applications. In *2022 10th European Workshop on Visual Information Processing (EUVIP)*. IEEE, 2022.

[C5] Elena Camuffo, Luca Gorghetto, and Leonardo Badia. Moving drones for wireless coverage in a three-dimensional grid analyzed via game theory. In *2021 IEEE Asia Pacific Conference on Circuit and Systems (APCCAS)*, 2021.

Journals

[J1] Elena Camuffo, Umberto Michieli, and Simone Milani. Learning from mistakes: Self-regularizing hierarchical representations in point cloud semantic segmentation. *Transactions on Multimedia*, 2023.

[J2] Francesco Barbato, Elena Camuffo, Simone Milani, and Pietro Zanuttigh. Continual road-scene semantic segmentation via feature-aligned symmetric multi-modal network. *arXiv preprint arXiv:2308.04702*, 2023.

[J3] Daniele Mari, Elena Camuffo, and Simone Milani. Cactus: Content-aware compression and transmission using semantics for automotive lidar data. *Sensors*, 23, 2023.

[J4] Elena Camuffo, Daniele Mari, and Simone Milani. Recent advancements in learning algorithms for point clouds: An updated overview. *Sensors*, 22, 2022.

$*$ indicates equal contribution.

I hereby authorize the processing of the personal data contained in this CV in compliance with the Italian Personal Data Protection Code (Legislative Decree no. 196 of 30 June 2003).