Davide **Talon**

PhD Student in Machine Learning
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Education

2020 - Today | **PhD Student in Machine Learning** | *Istituto Italiano di Tecnologia*
Second year PhD student at University of Genova.
Pattern Analysis and Computer Vision Group, advised by dr. Alessio del Bue. Working on representation learning for causality and disentanglement in visual data.

2017 - 2020 | **M.S. Computer Engineering** | *University of Padova*, 110 *cum laude*
Thesis: "Contextual Multi-task Learning via Regularization",
Advisor: Alessandro Chiuso.
Coursework: Data structures and Algorithms, Advanced Algorithms, Big Data Computing, Parallel Computing, Machine Learning, Computational Neuroscience, Operations Research, Intelligent Systems [Github], Human Data Analytics [Github].

2013 - 2017 | **B.S. Information Engineering** | *University of Padova*, 103/110
Thesis: "Experimental study of adaptative video streaming algorithms",
Advisor: Andrea Zanella.

Relevant Working Experiences

Charanga Ltd Software Developer Intern
June 2012 | *Brighton, UK*
Initial prototype development of the Digital Assets Management System of the company (Ruby on Rails, SQLite).

Skills

Computer skills
Over 5000 lines: Python, Java, Matlab. Proficient with Pytorch, Numpy.

Soft skills
Team working, leadership, open-mindness, self-motivation, self-management, curiosity, problem setting, problem solving, persistence.

Selected projects

Causality and disentanglement

Currently working on a benchmark dataset: a synthetic SCM whose high-level observations are projected in the high-dimensional visual space.

Puzzle Solving

Solving Jigsaw puzzles with a generative approach. Starting from patches, a generative model estimates their global placement. Assignment of pieces to slots is here framed as one-to-one assignment using a differentiable supervised approximation of the Hungarian algorithm. *Under review.*

Regularization in MTL

This work investigated how pre-trained single-task models can account for shared information with other tasks to improve their performance. To this end, we build on the conditioning capabilities of batch normalization parameters to align feature statistics of the multiple tasks [Github]

Raw Audio Generation

Development of a music generation system with a Generative Adversarial Network. The project aimed to generate fake music in the raw audio domain, which has the challenging problem of patterns at different time scales [Github]

Publications

D. Talon, A. Del Bue, S. James, "GANzzle: Reframing jigsaw puzzle solving as a retrieval task using a generative mental image." IEEE International Conference on Image Processing (ICIP), 2022.

D. Talon, L. Attanasio, F. Chiariotti, M. Gadaleta, A. Zanella, and M. Rossi, "Comparing DASH adaptation algorithms in a real network environment", *European Wireless 2019*, 2-4 May 2019, Aarhus, Denmark.

Other activities

Partecipant of Eastern European Machine Learning Summer School (EEML21).
Active member of the Causality Reading Group @TU-Darmstadt.
Reviewer for BMVC21, MULA@CVPR22, Pattern Recognition, CRL@UAI22, VISART@ECCV2022, nCSI@NeurIPS22.