Davide BUFFELLI

PERSONAL DATA

PLACE AND DATE OF BIRTH:	Italy | 30 December 1994	WEBSITE:	https://davidebuffelli.github.io
EMAIL:	davide.buffelli@unipd.it	LINKEDIN:	linkedin.com/in/davide-buffelli

ABOUT ME

I am a second year PhD student focusing on Graph Representation Learning, Graph Neural Networks, and Meta-Learning. I have a broad interest in Deep Learning, and I'm extremely passionate about it.

EDUCATION

OCT. 2019-*Present* — Ph.D Student in INFORMATION ENGINEERING,
Università degli studi di Padova, Padova.
Supervisor: Prof. Fabio VANDIN.

FEB. 2019 — Master's Degree in COMPUTER SCIENCE ENGINEERING,
with final grade 110/110 with honors, **Università degli studi di Padova**, Padova.
Thesis: "A Deep Learning Model for Personalised Human Activity Recognition."
Advisor: Prof. Fabio VANDIN.

JULY 2016 — Bachelor's Degree in INFORMATION TECHNOLOGY ENGINEERING,
with final grade 107/110, **Università degli studi di Padova**, Padova.
Thesis: "Algorithms for the determination of node centralities in a graph."
Advisor: Prof. Andrea Alberto PIETRACAPRINA.

WORK EXPERIENCE

JAN. 2021-JUL. 2021 — Research Intern at SAMSUNG AI RESEARCH, Cambridge
Supervisors: Efthymia Tsamoura and Timothy Hospedales.
I have worked on neurosymbolic approaches combining Deep Learning and Logical Reasoning. In more detail, the research done at Samsung focused on the development of a logic-based loss function for deep learning models with the goal of injecting *commonsense knowledge* into scene graph generation models. This work has led to a paper (currently under review), and a patent (pending).

APR. 2019-SEPT. 2019 — Research Fellow at UNIVERSITY OF PADOVA, Padova
Project: "Machine Learning for Temporal Data"
Supervisor: Professor Fabio Vandin.
The research project focused on the development of novel Deep Learning frameworks for multimodal times series.

JAN. 2019-FEB. 2019 — Data Scientist, Machine Learning Engineer at MACHINE LEARNING REPLY, Milan
During my time at Machine Learning Reply I had the chance to work for important clients on machine learning related projects. In particular I contributed to:
- the development of a chatbot that aids financial traders in their operations.
- the development of an automatic system for the analysis of documents and invoices.

The main technologies involved were: Python, Rasa, Google Cloud Vision, Java.

JUL. 2018-DEC. 2018 — DL Algorithm Development Intern at PHILIPS DIGITAL AND COMPUTATIONAL PATHOLOGY, Belfast
I worked in the team responsible for the development of algorithms that aid pathologists in the analysis of medical slides (inside the TissueMark application). This implied the creation, training and validation of Deep Learning models and the engineering, processing and analysis of data.
In more detail, my tasks included:
- The creation of an automatic system for the tuning of hyperparameters for Deep Learning models.
- The development of the algorithm for the identification of the appropriate tumour regions for macrodissection for lung tissue slides (which included the analysis and engineering of data and the training and validation of Deep Learning models).
- The development of technical tasks to improve the overall Deep Learning infrastructure.

The main technologies involved were: Python, Keras, TensorFlow.

Awards & Grants

- **Fondazione Luciano Iglesias Scholarship** - 07/08/2020
  Award given to the 10 best M.Sc. graduates in Computer Engineering at the University of Padova in 2019.

- **Full PhD Scholarship from the Department of Information Engineering (University of Padova)** - 2019-2022.

Publications & Submitted Papers

- **Attention-Based Deep Learning Framework for Human Activity Recognition with User Adaptation**
  Davide Buffelli, Fabio Vandin, *IEEE Sensors Journal*, 2021.
  [Paper] [PDF (arXiv)] [Code]

- **A Meta-Learning Approach for Graph Representation Learning in Multi-Task Settings**
  Davide Buffelli, Fabio Vandin, *NeurIPS Workshop on Meta-Learning (Meta-Learn)*, 2020.
  [PDF] [PDF (arXiv; with Appendix)] [Video] [Slides] [Poster] [Code]

- **Are Graph Convolutional Networks Fully Exploiting Graph Structure?**
  Davide Buffelli, Fabio Vandin, *(Under Review)*.
  [PDF (arXiv)] [Code]

Talks/Presentations/Posters

- **Invited Talk** - *"Word Embeddings & Graph Neural Networks for Automatic Reasoning over Knowledge Graphs"*
  Presented at the Word Embedding Reading Group (University of Padova) - 25/05/2020. [Video] [Slides]

- **Poster (Refereed Workshop)** - *"Are Graph Convolutional Networks Fully Exploiting Graph Structure?"*
  Presented at the ELLIS Workshop on Geometric and Relational Deep Learning - 24/02/2020. [Video] [Slides]

Student Supervision

- **Master's Thesis Supervision:** - Matteo Terranova ("Study of Regularization Techniques for Semi-Supervised Learning on Graphs with Graph Convolutional Networks"; co-supervised with Prof. Fabio Vandin, 2020).

Service

Reviewer	CONFERENCES: *RECOMB* 2020, *ISMB* 2020, *KDD* 2020, *ICDM* 2020, *NeurIPS Workshop on Meta-Learning (Meta-Learn)* 2020, *TheWebConf* 2021.
	JOURNALS: *ACM Transactions on Information Systems, IEEE Sensors Journal*.

Computer Skills

Proficient: PYTHON, JAVA

I worked extensively, both in an academic and in a professional environment, with the main Machine Learning and Deep Learning libraries such as TensorFlow, PyTorch, Keras, Pandas, scikit-learn.

Languages

ITALIAN:	Mother tongue.
ENGLISH:	Advanced C1.