

# Davide BUFFELLI

## PERSONAL DATA

PLACE AND DATE OF BIRTH: Italy | 30 December 1994  
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## 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. I am currently an intern at Samsung AI Research under the supervision of Efi Tsamoura and Timothy Hospedales.

## 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-PRESENT Research Intern at SAMSUNG AI RESEARCH, Cambridge  
Supervisors: Efi Tsamoura and Timothy Hospedales.  
Working on neurosymbolic approaches combining Deep Learning and Logical Reasoning.
- 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

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- **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

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- **Attention-Based Deep Learning Framework for Human Activity Recognition with User Adaptation**  
Davide Buffelli, Fabio Vandin, *IEEE Sensors Journal*, 2021.  
[\[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

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- **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

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- **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

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**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*

## COMPUTER SKILLS

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**Proficient:** PYTHON, JAVA

**Familiar:** C, APACHE SPARK, SQL, POSTGRESQL, OBJECTIVE-C, SWIFT.

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

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**ITALIAN:** Mother tongue.

**ENGLISH:** Advanced C1.