Dennis Bontempi

Personal Information

Place and date of birth:	Gardone Val Trompia, Italy | 11th May 1994
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Education

From October 2019	Research Scholar, **Artificial Intelligence in Medicine (AIM) Program, Mass General Brigham, Harvard Medical School**, Boston, Massachusetts. PhD Student, Faculty of Health, Medicine and Life Sciences, **Maastricht University/UMC+**. Advisor: Prof. Hugo Aerts
From June 2019 to September 2019	Research Scholar, Department of Information Engineering, **Università degli Studi di Brescia**, Brescia Research topic: "Deep Learning methods for 3D medical image segmentation" Supervisor: Dr. Alberto Signoroni
March 2019	Master of Science in Communication Technologies and Multimedia, **Università degli Studi di Brescia**, Brescia. Dissertation titled: "A Fully Volumetric Deep Learning Approach to Brain MRI Segmentation". Advisors: Prof.s Sergio Benini (Università degli Studi di Brescia) and Lars Muckli (University of Glasgow) Grade Point Average: 29.43/30 Final grade: 110/110 *cum laude*

From July 2018 to December 2018	Post-graduate Researcher at the Centre for Cognitive Neuroimaging, Institute of Neuroscience and Psychology, **University of Glasgow** Supervisors: Prof. Lars Muckli, Dr. Michele Svanera
September 2016	Bachelor of Science in Electronics and Telecommunication Engineering, **Università degli Studi di Brescia**, Brescia Curriculum: Telecommunications Dissertation titled: "Implementation of an Algorithm for the Transformation of a Sequence Based on the Iterative Analysis of Local Symmetries". Advisor: Prof. Riccardo Leonardi Grade Point Average: 28.60/30 Final grade: 110/110 *cum laude*

Hard and Soft Skills

I know several programming languages: **Python** (*signal and image processing, machine learning and deep learning, data analysis and visualisation, scripting*), **MATLAB** (*signal and image processing, data analysis*), **Bash** (*scripting*), **R** (*machine learning, statistical analysis, data analysis, and visualisation*) and **C/C++** (*image processing, scripting*).

I have a good knowledge of the TensorFlow 1.xx (as well as the Keras high-level APIs) and PyTorch Deep Learning frameworks. My experiences - as a post-graduate researcher at the University of Glasgow and as a doctoral student/research scholar between The Netherlands and The USA - solidified my competences in working with, handling and processing big and complex real-world data-sets (both DICOM and clinical data). After years spent working and travelling between several countries, research labs and disciplines, collaborating in a multicultural environment and communicating efficiently with people from different fields is something that I am very well accustomed to.

During the last years spent as a researcher at the Harvard's Artificial Intelligence in Medicine Program and at Maastricht University/MUMC+, I also had the opportunity to follow courses and interact with people from several disciplines. This led me to significantly improve my domain-specific knowledge - in my opinion, crucial to the application of AI to medical images in a clinical setting (e.g., from basic principles of imaging acquisition techniques and thoracic oncology, to survival analysis and more). Furthermore, thanks to my experience as part of the Imaging Data Commons team, I also gained extensive experience in deploying data mining pipelines and AI models on the Google Cloud Computing Platform.

Finally, I have been a passionate Linux user for years - I am managing several local research nodes accessed by multiple individuals - and I have a great familiarity with the LaTeX (LaTeX) markup language.

Projects

AI in Neuroimaging

As a Post-graduate Researcher at the University of Glasgow and at the University of Brescia, I worked on the application of AI in the neuroimaging domain - specifically, for the segmentation of brain substructures from 3 and 7 Tesla Magnetic Resonance images (prior to fMRI studies).

Technology Used:

- Domain-specific (e.g., software for Brain MR processing and visualisation)
- Python (AI, neuroimaging tools, stat. analysis)
- MATLAB (DSP, neuroimaging tools)

AI in Medicine Research

As a Research Scholar at the MGB AIM program, and a PhD student at Maastricht University, I'm working on various applications of AI in the medical domain.

Technology Used:

- Domain-specific (e.g., software for DICOM handling, processing and visualisation)
- Python (DSP, data mining, AI)
- R (statistical and survival analysis)
- Linux/bash (AI nodes system administration)
- MATLAB (DSP, domain-specific software)

Imaging Data Commons

As part of the Imaging Data Commons team, I am working on the integration of AI-based image processing pipelines in the cancer imaging platform, which we released or are planning to release under multiple GitHub repositories. I also held presentations about such work in venues such as MICCAI, NIH open meetings, and RSNA.

Technology Used:

- All the tools mentioned above, plus
- Several tools from the Google Cloud Computing Platform (Healthcare)

MHub

As one of the lead developers at MHub, I am working on the standardisation of of AI pipelines in medicine and the integration of these pipelines in other platforms. together with the team, I also held presentations about such work in venues such as the NA-MIC project week.

Technology Used:

- All the tools mentioned above, plus
- Docker
- GitHub Actions

Languages Proficiency

Italian:	Native Speaker
English:	Proficient user • reading, writing, listening and speaking: C2
French:	Basic user • reading: B1 • writing, listening and speaking: A2
Dutch:	Basic user • reading, writing, listening and speaking: A1

I developed really good English communication skills thanks to my international Master of Science program, my period at the Centre for Cognitive Neuro-imaging (University of Glasgow), and my experience as a doctoral student in a transatlantic research group (The Netherlands and The USA).

Further Interests

My interests include cooking, watching and practising sports (and motor-sports), photography and gaming.

I love music: I played the transverse flute as well as drums for several years, and I'm currently learning to play the guitar and the ukulele in my spare time. Some of the genres that I enjoy listening are rock, alternative rock and metal-core, but also indie pop and classical music (mainly movie and video-game soundtracks). Apart from these, I always appreciate bands that make use unconventional and experimental sounds (electronic/jazz fusion, progressive rock and metal).

Health, nutrition, and sports became essential components of my life during my doctoral studies. I enjoy experimenting with new recipes, exploring different approaches to nutrition, and do my best to stay on top of the scientific literature regarding the latter (as well as general health). Additionally, I am very passionate about sports, as I feel they are instrumental in cultivating a sense of discipline and teamwork - besides helping me maintaining good health. In these last years I became a frequent practitioner of squash and padel, yoga and martial arts, and various strength training programs.

Another hobby that I really like is reading. When I was younger I enjoyed all sort of comics, whilst nowadays I love mainly fantasy, sci-fi, modern literature and non-Fiction books. Some of my favourite authors include I. Asimov, P. K. Dick, D. Adams, J. R. R. Tolkien, D. Mitchell, R. Feynman, and H. P. Lovecraft. Lately, my preference shifted more towards pop-science books about health, nutrition, and biology.