

Valentina Giunchiglia

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EDUCATION

- 2022-2026 **MRC MultiSci PhD program**, Artificial Intelligence applied to health, Imperial College London (1 year of project rotations + 3.5 years of PhD)
- 2020-2021 **MRes Biomedical Research – Data Science (Grade: Distinction)**, Imperial College London, Faculty of Medicine. *Dissertation:* Analysis of cognitive and multi-modal imaging data to find the best predictors of Alzheimer’s progression. *Advisors:* Prof. Adam Hampshire and Dr. Amy Jolly.
- 2019-2020 **MA Health Humanities (Grade: Distinction)**, University College London, Center for Multidisciplinary & Intercultural Inquiry. *Dissertation:* The association of inflammation with positive and negative social relationships: findings from the English Longitudinal Study of Ageing. *Advisors:* Prof. Andrew Steptoe and Dr. Eleonora Iob.
- 2016-2019 **BSc Molecular Biotechnology – Bioinformatics**, Heidelberg University, Institute of Pharmacology and Molecular Biology (IPMB). *Dissertation:* Estimating RNA velocity using spliced and unspliced RNAs in developing regulatory T-cells. *Advisors:* Prof. Benedikt Brors and Dr. Charles Imbush.

HONORS AND AWARDS

- 2022-2026 **Winner of PhD studentship** funded via the Medical Research Council Doctoral Training Partnership (MRC DTP) - Imperial College London
- 2022 Award of **NIHR Biomedical Research Grant** (~£60K) based on my results.
- 2020-2021 Faculty of Medicine **Dean’s Prize** for Biomedical Research (Data Science): award for graduating as top in the class, Imperial College London
- 2020-2021 **Collegiate Award for Biomedical Research:** award established to recognize the work I have done to support other students in the MRes Biomedical Research, Imperial College
- 2021 **Award for best Grant Proposal**, Title: “The role of context in the perception of social interactions and its implications for the social impairment in Autism Spectrum Disorder”, Department of Metabolism, Digestion and Reproduction, Imperial College London
- 2021 **Award for best 3-minutes thesis presentation** among all students that obtained a scholarship in the Faculty of Medicine, Imperial College London
- 2020-2021 **Winner of the John Alero Scholarship**, Imperial College London, Faculty of Medicine (Assigned to the most promising students for a research career within the whole faculty of medicine at Imperial College London).
- 2019-2020 **Dean’s List 2020**, Faculty of Arts and Humanities, University College London

RESEARCH EXPERIENCE

- 07/2022 – current **Research Project**, Towards Training Graph Neural Networks using Explanation Directed Message Passing. *Supervisor:* Chirag Agarwal
- 11/2021 - current **Research Technician**, UK Multiple Sclerosis and Parkinson’s Tissue Bank and NIHR Biomedical Research Grant, Imperial College London. Tasks include: 1) Image analysis, ML/AI analysis, computational modelling of Parkinson’s and Multiple Sclerosis data 2) Setting up user interface for the Brain Bank, 3) Cognitive/mental health data collection for the Brain Bank and analysis of data collected using the same technology and 4) Students’ teaching and supervision. *Supervisors:* Prof. Adam Hampshire, Prof. Steve Gentlemen, Prof. Richard Nicholas.

03/2021-09/2021	Master Thesis placement , Imperial College London, Faculty of Medicine. <i>Project title:</i> Analysis of cognitive and multi-modal imaging data to find the best predictors of Alzheimer’s progression. <i>Supervisors:</i> Prof. Adam Hampshire and Dr. Amy Jolly.
12/2020-04/2021	Intern in Psychobiology , University College London, Institute of Epidemiology and Health Care. <i>Project title:</i> Associations of adverse childhood experiences with inflammatory and neuroendocrine biomarkers and depressive symptoms in childhood and early adulthood. <i>Supervisor:</i> Dr. Eleonora Iob
10/2020-03/2021	Postgraduate Research , Imperial College London, Faculty of Medicine. <i>Project title:</i> AI-based histological image analysis for tissue diagnostic. <i>Supervisors:</i> Prof. Zoltan Takats and Dr. James McKenzie.
05/2020-11/2020	Intern in Social Sciences research , University College London, RREAL Lab. <i>Project title:</i> Rapid review of healthcare policies implemented in Italy during the COVID-19. <i>Supervisor:</i> Dr. Eleonora Iob
05/2020-09/2020	Master Thesis Placement , University College London, Institute of Epidemiology and Health Care. <i>Project title:</i> Association of inflammation with positive and negative social relationships. <i>Supervisors:</i> Prof. Andrew Steptoe, Dr. Eleonora Iob.
04/2019-07/2019	Bachelor Thesis Placement , German Cancer Research Center (DKFZ). <i>Project title:</i> Estimation of RNA velocity using spliced and unspliced RNAs in developing regulatory T-cells. <i>Supervisors:</i> Prof. Benedikt Brors and Dr. Charles Imbusch.
08/2018-10/2018	Industrial Intern in Bioinformatics , Janssen Pharmaceutica (J&J). <i>Project title:</i> Automated annotation of immune cell populations in single cell RNAseq-data. <i>Supervisors:</i> Dr. Joke Reumers and Dr. Dries De Maeyer.
12/2017-04/2018	Remote Research Assistant , University of Trento, Center of Integrative Biology. <i>Project title:</i> Metadata collection from microbiota related articles. <i>Supervisor:</i> Prof. Nicola Segata.
09/2017-10/2017	Intern in Data Science , University of Edinburgh, Edinburgh BioQuarter. <i>Project title:</i> MOOC on “Data science applied to precision medicine and stratified healthcare”. <i>Supervisors:</i> Prof. Dave Robertson and Dr. Areti Manataki.

TEACHING EXPERIENCE

2022/2023	Lectures and workshops in MATLAB/Python programming, brain image analysis and machine learning: Imperial College London, MSc Translational Neuroscience
2022/2023	Workshops in 1) Clustering, 2) Machine learning, 3) Dimensionality Reduction, 4) Natural Language Processing, 5) Resampling methods, model validation and data simulation, 6) univariate statistics: Imperial College London, MRes Biomedical Research – Data Science
01/2022 – 03/2022	Lectures and workshops in brain image analysis (MRI, fMRI, DTI) and machine learning: Imperial College London, MSc Translational Neuroscience
11/2021	Lectures’ demonstrator in Machine learning , GirlsWhoML, Imperial College London
12/2020 – 08/2021	Data Science Sessions: lectures and Q&A sessions of Data Science for students in the MRes Biomedical Research at Imperial College London.
05/2019-07/2019	Teaching Assistant in data analysis in R , Heidelberg University. Tutoring of 20 second year students of BSc Molecular Biotechnology in the completion of a R Project on Cancer Methyloome Analysis.

STUDENTS’ SUPERVISION

2022	Octavia Leahy (MSc thesis): “A free-text analysis of the impact of the COVID-19 pandemic on mental health and effective coping strategies: a longitudinal study”
2022	Manini Jain (Undergrad Internship): “Developing a rational approach to automated analysis of human brain tissue pathology”

SCIENTIFIC PRESENTATIONS

- Giunchiglia V.** “Using multimodal data in biomedical research”, Data Engineering Europe Meetup, QuantumBlack, March 2022
- Giunchiglia, V.** “AI in clinical practice: dream or reality? The case study of Alzheimer’s”, Imperial College Data Science Society, November 2021
- Giunchiglia, V.** “DS Helper Team: Student Driven Peer-learning in Biomedical Data Science”, Talking Teaching Seminar, Imperial College London, May 2021
- Giunchiglia, V.** “AI-based histological image analysis for tissue diagnostic”, Dean’s Master Scholar Presentation Event, Imperial College London, May 2021
- Giunchiglia, V.** “Psychobiology: looking at the bigger picture”, Bioinformatics Seminar, Department of Metabolism, Digestion and Reproduction, Imperial College London, November 2020.
- Giunchiglia, V.** “Estimating RNA velocity using spliced and unspliced RNAs in developing regulatory T-cells”, Applied bioinformatics research group, German Cancer Research Center, June 2019.
- Giunchiglia, V.** “Automated annotation of immune cells”, Johnson and Johnson, October 2018.

LEADERSHIP AND MANAGEMENT EXPERIENCE

- 2021 **Organizer of networking event:** “Research and Careers at Imperial College London”.
- 2020-present **Organizer of Data Science Helper Team**, https://github.com/valegiunchiglia/DS_sessions
- 2020-present **Student representative**, MRes Biomedical Research – Data Science, Imperial College.
- 2020 **Debating society and competitions.**
- 2019-2020 **Student representative**, MA Health Humanities, University College London.
- 2017-2018 **Member of TEDxUniHeidelberg Committee:** event management and promotion.

TECHNICAL SKILLS

Programming Languages: Python, R, Bash, MATLAB

Techniques: deep learning, machine learning, image analysis, statistical analysis, bioinformatics

Data types: imaging (MRI, diffusion tensor imaging, histology images), cognitive and behavioral data, genetic

Neuroscience software: Freesurfer, FSL

Web Development (intermediate): JavaScript, HTML, CSS

Familiar with SQL, STATA

LANGUAGE SKILLS

Language	Italian	English	German	Spanish
Level	Native	Fluent (C1)	Fluent (C1)	Intermediate (A2-B1)

VOLUNTEERING

- 2020-present Career consultant, YourGuide: mentorship for Italian students who want to work/live abroad.
- 2013-2018 Student volunteer during conferences: Heidelberg Symposium (Heidelberg, Germany), TEDx Trento (Italy) & TEDx Richmond (VA, USA), ICT days (Trento, Italy).
- 2015-2016 Science Museum volunteer, MUSE (Trento, Italy).
- 2014-2015 Tutor of Algebra II, Richmond community High school (VA, USA).
- 2014-2015 Volunteer at social events: 10K Run, Folk Festival, Infant & Toddler connection of Virginia (Richmond, VA, USA).

PUBLICATIONS

Delacher, M., Imbusch, C.D., Hotz-Wagenblatt, A., Mallm, J.P., Bauer, K., Simon, M., Riegel, D., Rendeiro, A.F., Bittner, S., Sanderink, L., Pant, A., Schmidleithner, L., Braband, K.L., Echtenachter, B., Fischer, A., **Giunchiglia, V.**, et al. Precursors for nonlymphoid-tissue Treg cells reside in secondary lymphoid organs and are programmed by the transcription factor BATF. *Cell Immunity*, 2020, 52(2), 295-312. [Cit. 82. https://doi.org/10.1016/j.immuni.2019.12.002](https://doi.org/10.1016/j.immuni.2019.12.002)

- Lewis-Jackson, S., Iob, E., **Giunchiglia, V.**, *et al.* “Policies and politics: an analysis of the public policies aimed at the reorganization of healthcare delivery during the COVID-19 pandemic”. In *Caring on the Frontline during COVID-19* (pp. 39-64). Palgrave Macmillan, Singapore. https://link.springer.com/chapter/10.1007/978-981-16-6486-1_3
- Iob, E., Lacey, R., **Giunchiglia, V.** *et al.* Adverse childhood experiences and severity levels of inflammation and depression from childhood to young adulthood: a longitudinal cohort study. *Mol Psychiatry* 27, 2255–2263 (2022). <https://doi.org/10.1038/s41380-022-01478-x>
- Isberg OG, **Giunchiglia V.**, *et al.* Automated Cancer Diagnostics via Analysis of Optical and Chemical Images by Deep and Shallow Learning. *Metabolites*. 2022; 12(5):455. <https://doi.org/10.3390/metabo12050455>
- Giunchiglia, V.***, Shukla CV.*, *et al.* Towards Training GNNs using Explanation Directed Message Passing. *LOG Conference* (Under Review)
- Giunchiglia, V.**, *et al.* An explainable recurrent neural network to find translatable predictors of Alzheimer’s clinical status” *Scientific Reports* (Under Review).
- Giunchiglia, V.**, *et al.* WSIQC: whole slide images pre-processing pipeline for artifact removal and quality control. *Medical Image Analysis* (Under Review).
- Kurtin LD., **Giunchiglia, V.**, *et al.* Moving from phenomenological to predictive modelling: Progress and pitfalls of modelling brain stimulation in-silico. *NeuroImage* (Under Review)
- Manghi, P., Schiffer, L., Golzato, D., Wokaty, J., Beghini, F., Mirzaji, C., Oh, S., Tuz, SDG., Bonetti, A., D’Amato, G., Azhar, R., Piccinno, G., Eckenrode, K., Zohra, F., **Giunchiglia, V.** *et al.* Meta-analysis of 20,533 human metagenomes from diverse populations in curatedMetagenomicData 3 defines an index of oral to gut microbial introgression and microbiome associations with age, sex, BMI, and health outcomes. *Nature Communications* (Under Review).

Publications in preparation

- Magliozzi R.*, **Giunchiglia V.***, Mensi A.*, *et al.* Diffusely abnormal white matter and elevated grey matter demyelination imply more rapid and grey matter demyelination progression. *New England Journal of Medicine*.
- Giunchiglia, V.** *et al.* A novel fixed-point method for fractionating motor, device and cognitive variability in online and computerized cognitive test data: applications with Cognitron and UKBioBank big data. *Nature Digital Medicine*.

Posters

- Magliozzi R.*, **Giunchiglia V.***, Mensi A.*, *et al.* Diffusely abnormal white matter and elevated grey matter demyelination imply more rapid and grey matter demyelination progression, *ECTRIMS October 2022. Journal of Multiple Sclerosis*.
- Giunchiglia, V.** *et al.* An automated data cleaning approach to remove preparation artefacts from brain histology slide images. *Congress of Parkinson’s Disease and Movement Disorder*, September 2022, *Journal of Movement Disorders*. <https://doi.org/10.1002/mds.29223>
- Giunchiglia, V.**, *et al.* DS Helper Team: Student Driven Peer-learning in Biomedical Data Science. *Education Week*. Imperial College London, May 2021.
- Manghi, P., Asnicar, F., Azhar, R., Beghini, F., Blanco Miguez, A., Bonetti, A., D’Amato, G., Eckenrode, K., El-Safoury, S., Geistlinger, L., Golzato, D., **Giunchiglia, V.**, *et al.* curatedMetagenomicData 3: 20,283 curated, accessible human metagenomes, unraveling links with phenotype and patient conditions. *International Human Microbiome Consortium Congress*. 2021.