MARCELLA MONTAGNESE

Website: https://www.marcellamontagnese.com/

EDUCATION

PhD 11	1
Neuroimaging	ζ

Medical Science -

Computational

• King's College London (2018-2022)

Thesis: *The neural basis of psychosis in Parkinson's Disease: a network neuroscience approach.* Supervisors: Professor Mitul Mehta and Professor Dominic ffytche; Advisor: Dr Sarah Morgan.

• University of Cambridge (2017-2018)

First Class (Starred Distinction) Thesis: *Reinforcement learning in psychosis and NSPN: Relation to genetic risk for schizophrenia and negative symptoms* Supervisor: Dr Graham Murray. Examiners: Professor Angela Roberts, Professor Michael Browning

BA (Hons) Psychology & Neuroscience

Psychiatry

MPhil in

• University of Cambridge (2014-2017)

First Class (Distinction) Thesis: *Plasticity In The Auditory System During Sleep - EEG Experiment Investigating The Influence Of Auditory Stimuli Presentation During Sleep On The N1 ERP Responses* Supervisors: Dr. Tristan Bekinschtein and Dr Anat Arzi

EMPLOYMENT & RESEARCH EXPERIENCE

Research Associate in Neuroinformatics	 University of Cambridge, Department of Psychology (Oct 2024-Present) Developing and validating data-driven normative models (human brain charts) with neuroimaging and health records for advancing precision medicine in memory clinic cohorts. Funded by the Academy of Medical Sciences Springboard Award.
	 University of Cambridge, Department of Clinical Neuroscience (Sep 2022-Oct 2024) Working on artificial intelligence (AI) tools in combination with clinical and biological data for individualised dementia diagnosis. Expertise with data-driven approaches to neuroimaging in memory clinic cohorts (QMIN-MC and NACC), including data standardisation, pre-processing, and harmonisation.
Junior Research Fellow	• University of Cambridge, Christ's College (Oct 2023-Sep 2027) Junior Research Fellowship position for 4 years.
Google Ambassador	• Google Women Techmakers Ambassador (Nov 2022-Present) Promoting open access to coding and AI resources for women in technology. https://developers.google.com/profile/u/marcellamontagnese
Research Internship	 University of Cambridge, Psychiatry Department (2021-2022) 5% success rate: NIHR SPARC Award Internship to work on graph-theoretical and Machine Learning analyses of brain imaging data under the supervision of Professor Ed Bullmore and Dr. Sarah Morgan.
Summer Research Fellowships	• University of Cambridge, Genetics Department (Jun-Aug 2016) Running optogenetic testing of the role of modulatory neurons in larval Drosophila. Funded by the Genetics Society UK Summer Studentship Award
	• Harvard University, Psychology Department (Jul-Sep 2015) Running eye-tracking experiments on patients with Prader-Willi syndrome.
	PUBLICATIONS

Under	Montagnese M, Rangelov B, Doel T, Oxtoby N, Rittman T Challenges and Opportunities of Federated
Review	Learning: A New Frontier for Artificial Intelligence and Precision Medicine in Dementia Healthcare and
	Research. Under Review in Nature Machine Intelligence

	Montagnese M , Mehta, M, ffytche D, Firbank M, Lawson R, Taylor J.P, Bullmore E, Morgan S - Disrupted functional brain network associated with presence of hallucinations in Parkinson's Disease. <i>Under Review in npj Parkinson's Disease</i>
2024	Montagnese M , Rittman T Bridging Modifiable Risk Factors and Cognitive Decline: The Mediating Role of Brain-Age <i>The Lancet Healthy Longevity</i> , <i>5</i> (4), <i>e243-e244</i> . <i>https://doi.org/10.1016/S2666-7568</i> (24)00042-4
	Yuanxi Lee L, Vaghari D, Burkhart M, Tino P, Montagnese M , Zühlsdorff K, Giorgio J, et al Robust and translatable AI for dementia diagnosis and prognosis in real-world clinical settings. <i>The Lancet eClinicalMedicine. https://doi.org/10.17863/CAM.108903</i>
	Laurell A, Rittman T, Schmidt T, Montagnese M , Lewis J, Mundell C, Isaacs JD, Krishnan M, Barber R, Underwood B Estimating demand for potential disease-modifying therapies for Alzheimer's disease in the UK. <i>The British Journal of Psychiatry</i> ,1-7. https://doi:10.1192/bjp.2023.166
2023	Wright A, Palmer-Cooper E, McGuire N, Montagnese M , et al. (2023)- Metacognition and psychosis-spectrum experiences: a study of objective and subjective measures. <i>Schizophrenia Research</i> , https://doi.org/10.1016/j.schres.2022.12.014
	Wright A, Palmer-Cooper E, Cella M, McGuire N, Montagnese M , et al. (2023)- Experiencing hallucinations in daily life: The role of metacognition. <i>Schizophrenia Research</i> , https://doi.org/10.1016/j.schres.2022.12.023
2022	Montagnese M et al., (2022) - Cognitive And Visual Processing Performance In Parkinson's Disease Patients With vs Without Visual Hallucinations: A Multilevel Meta-Analysis. <i>Cortex</i> , 146, 161-172 https://doi.org/10.1016/j.cortex.2021.11.001
	Montagnese M , et al., (2022)- Cognition, hallucination severity and hallucination-specific insight in neurodegenerative disorders and eye disease. <i>Cognitive Neuropsychiatry</i> , 1-17 https://doi.org/10.1080/13546805.2021.1960812
	Williams D, Montagnese M - (2022) Bayesian Psychiatry and the Social Focus of Delusions. <i>In press</i> in <i>Expected Experiences: The Predictive Mind in an Uncertain World, (eds)</i> Cheng,T., Sato,R., Hohwy,JRoutledge: London https://doi.org/10.13140/RG.2.2.27852.23683
2021	Montagnese M et al., (2021)- A Review of Multimodal Hallucinations: Categorisation, Assessment, Theoretical Perspectives And Clinical Recommendations. <i>Schizophrenia Bulletin</i> , 47(1), 237-248 https://doi.org/10.1093/schbul/sbaa101
	Wong JY, Wan BA, Bland T, Montagnese M , McLachlan A,O'Kane CJ,Zhang SW,Masuda-Nakagawa L (2021)- Octopaminergic neurons have multiple targets in Drosophila larval mushroom body calyx and can modulate behavioral odor discrimination. <i>Learning and Memory</i> , 28(2), pp.53-71. https://doi.org/10.1101/lm.052159.120
	Rains L, () & The COVID-19 Mental Health Policy Research Unit Group (2021)- Early impacts of the COVID-19 pandemic on mental health care and on people with mental health conditions: framework synthesis of international experiences and responses. <i>Social psychiatry and psychiatric epidemiology</i> , 56(1), pp.13-24. https://doi.org/10.1007/s00127-020-01924-7
2020	Montagnese M et al., (2020)- Reinforcement learning as an intermediate phenotype in psychosis? Deficits sensitive to illness stage but not associated with polygenic risk of schizophrenia in the general population. <i>Schizophrenia Research</i> , (222), pp.389-396. https://doi.org/10.1016/j.schres.2020.04.022
	GRANTS AND AWARDS
2024	ARUK Grant for work on Morphometric Inverse Divergence networks and post-mortem brains (£3.847)

2024	and Travel Grant (£400)
2022-Present	Selected as an ambassador for Google's Women Techmakers Initiative out of thousands of applicants
2021-2022	NIHR SPARC Scheme Award for placement at the University of Cambridge - 5% success rate - (£4,000)

2021	Grant for Oxford Machine Learning Summer School - 10% success rate
2021	King's College London HSDTC Award for advanced coding skills (£420)
2020	British Neuropsychiatry Association ECHR Award (£120)
2019	British Neuroscience Association Award (£300)
2018-2022	NIHR Biomedical Research Centre (BRC) PhD Studentship (>£70,000)
2018	King's College Cambridge Graduate Student Fund (GSF) grant (£305)
2016	Genetics Society UK- Summer Studentship Award (£1,600)
	King's College Cambridge HE Durham Fund for vacation research (£700);
	Bedford fund for research on animal biology (£250);
2015	Prize for best undergraduate project presentation (Harvard University);
2014-2017	Cambridge University European Bursary (£5,400);
	King's College Cambridge Ernest Gellner's Scholarship (£4,500)
2012-2014	St Clare's Oxford full Academic scholarship (£56,000); x4 Awards for academic excellence (£800)
	TECHNICAL SKILLS AND EXPERTISE
Computational and Statistics	• Python, MATLAB, R, Bash and LATEX
	• Expertise with pre-processing, harmonisation, and analysis of multimodal imaging data (resting fMRI, structural MRI, diffusion weighted imaging, EEG).
	• Expertise with Freesurfer, SPM, FSL, AFNI
	Machine Learning libraries (TensorFlow, PyTorch, Scikit-learn, Numpy, Keras)

- Knowledge of federated learning techniques and cloud computing (AWS, Google)
- Computational modelling, transcriptomic analyses, and neural-receptor map analyses
- Expertise with large clinical and imaging datasets (UK-Biobank, PPMI, NACC)
- Transcriptomic analyses (Allen Brain Atlas) and neural-receptor map analyses
- Reproducible data analysis pipelines, Git version control, Singularity, Dockers
- High-performance computing (HPC) using Sun Grid Engines and Slurm

PRESENTATION AND SYMPOSIA

Conference organisation	• Working group leader for International Consortium of Hallucination Research (ICHR) - "Multisensory Hallucinations Group" (2021 to date)
	• Co-organiser of the Neuroimaging Seminars at the Centre for Neuroimaging Science (KCL) (2018 to 2020)
	Main organiser of the Wilberforce Society conference on schizophrenia
	TEDx Cambridge University 2017 Conference
Invited Talks	Christ's College Cambridge - Annual Medical Society Conference (April 2024)
	Cambridge University Department of Clinical Neuroscience Symposium (December 2023)
	• DEMON Network Applied Models and Digital Health Working Group meeting (April 2023)
	Trinity College Cambridge - Early Career Researchers Spotlight (2023)
	• The Brain Conference (2022). Only ECR invited as speaker for the Psychosis session.
	International Consortium on Hallucination Research (2021)
	King's College Cambridge Rising Talent Spotlight Talk (2018)
	The Genetics Society UK workshop in Edinburgh (2017)
Conference	OHBM poster presentation (June 2022, July 2023, June 2024)
Talks and Poster Presentation	• The Brain Conference (2022)- Featured poster in Psychosis session

- Poster presentation at BNPA 2020 Conference and at BNA 2019 Conference
- 'Towards an understanding of reinforcement learning in Psychosis', Fletcher's lab (Cambridge) 2018
- 'Influence of Auditory Stimuli in Sleep on N1 ERP Component', Bekinschtein Lab (Cambridge) 2017
- Public speaking in BBC ARTiculation show 2014

TEACHING, ACADEMIC SERVICE, AND PUBLIC OUTREACH

Teaching	 Interviewer for Psychological and Behavioural Sciences (PBS) undergraduate admissions, Christ's College, University of Cambridge (2023, 2024)
	Academic Research Skills Lectures for MCR students at Christ's College Cambridge (2024)
	• Supervisor for Psychological and Behavioural Science Tripos Part IA at Cambridge University (2017-2018, 2023). Modules: PBS1 (Introduction to Psychology) and PBS2 (Psychological Enquiry and Methods)
	 Statistics and Coding instructor at King's College London (2020-2021)
	• Academic Tutor in Psychology, Biology and Statistics on MyTutor online platform. One-to-one tuition to students from disadvantaged backgrounds (Government's 'Pupil Premium' initiative) (2017-2020)
	• Study Skills tutor for undergraduates at King's College in Cambridge (2017-2018)
Diversity and inclusion, Public engagement	• Co-organiser of the AI Cafè in collaboration with the Accelerate Science Team (https://acceleratescience.github.io/). Event aimed at graduate students from all disciplines at Christ's and Jesus College Cambridge (April 2024)
	• Delivering academic sessions in the Explore Christ's Summer School for students in underrepresented groups and socio-economic areas in the UK;
	Neuroscience Lecture Access Scheme at KCL (2021, 2022);
	 Athena Swan committee member in the School of Clinical Medicine (Cambridge University) - (2017-2018, 2022-2023)
	 Cambridge University MyHE+ academic articles for students from unprivileged backgrounds applying to Oxbridge;
	• Student Minds Cambridge College Rep for mental health support (2016-2018)
	• Helped conducting a public engagement experiment on caffeine's effects on cognition at London Science Gallery, enhancing public understanding of neuroscience research methods (2018)
Grant Reviewing	Wellcome Mental Health Award Scheme
Peer-review	 The Lancet Neurology; Biological Psychiatry; Human Brain Mapping; Neuropsychopharmacology; Cognitive Neuropsychiatry; Translational Psychiatry.