Ignacio Taguas

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PhD candidate with a passion for neuroscience and a strong background in computational modeling of biological processes. My goal is to understand the underlying mechanisms of brain disorders and to actively bridge the gap between affected people and the research done by making science accessible to them.

Research experience

RIKEN Center for Brain Science   **June 2023 – Aug 2023**
Neural Circuits and Computations Unit – Supervisor: Dr. Louis Kang

RIKEN CBS Summer Program 2023 fellow, Japan
- Will participate in a project to evaluate the influence of attractor topology on seizure initiation

Complutense University of Madrid   **Sept 2021 – Present**
Center for Cognitive and Computational Neuroscience – Supervisors: Prof. Fernando Maestú, Dr. David López-Sanz

Research staff and PhD Candidate, Spain
- Participated in two projects: eBRAIN-Health (European) and CogNe (Spanish)
- Designed a tACS neurostimulation protocol based on computational models
- Recorded and preprocessed magneto- and electroencephalography and tACS neurostimulation data
- Developed a functional connectivity data analysis pipeline using graph theory in Matlab and Python

Technical University of Madrid – Department of Applied Mathematics   **Sept 2019 – Aug 2021**
Complex Systems group – Supervisors: Dr. José Angel Capitán, Dr. Juan Carlos Nuño

Research assistant, Spain
- Competitive research grant for graduate students – Spanish government
- Designed and evaluated a mathematical model for the spread of infections in plant populations
- Conducted a computational analysis to investigate the temporal dynamics and stability of the model

Center for Plant Biotechnology and Genomics   **June 2018 – July 2019**
Plant-Virus Interaction and Co-Evolution group – Supervisor: Prof. Fernando García Arenal

Undergraduate student, Spain
- Competitive research grant for undergraduate students – Technical University of Madrid
- Participated in a Spanish project: Virulence and tolerance in plant-virus interactions
- Analyzed the spread patterns and effects of the oomycete *Albugo sp.* in a wild population of the *Arabidopsis thaliana* plant using generalized linear mixed models in R

Center for Biomedical Technology   **May 2017 – July 2017**
Data Mining and Simulation group – Supervisor: Prof. Ernestina Menasalvas

Undergraduate student, Spain
- Trained and optimized unsupervised learning algorithms to classify patients based on physiological data

Publications

Papers
- **Taguas, I.**, Capitán, J. A., & Nuño, J. C. (2022). Dropping mortality by increasing connectivity in plant epidemics. Phys. Rev. E, 105, 064301. doi:10.1103/PhysRevE.105.064301. **Q1** – **Editor's Suggestion**

- **Taguas, I.**, Maclot, F., Montes, N., Pagán, I., Fraile, A. & García-Arenal, F. Patterns of infection, and effect on host survival and reproduction, of *Albugo* sp. infection in a wild population of *Arabidopsis thaliana*. **Manuscript in preparation**
- **Taguas, I.**, Doval, S., Maestú, F, & López-Sanz, D. Evidence of centrality disruption in cross-frequency networks in amnestic mild cognitive impairment patients. **Manuscript in preparation**

Congresses
- **Taguas, I.**, Doval, S., Maestú, F., López-Sanz, D. Evidence of different contributions of correlations and anticorrelations to network structure in AD. 7th HBP Student Conference on Interdisciplinary Brain Research. **Poster presentation**
- Study of the effect of positive and negative correlations on functional connectivity disruption in MCI. Neuromatch Conference 2022. **Flash talk**
- **Taguas, I.**, Doval, S., Maestú, F., López-Sanz, D. Study of the human cortical hub structure in MCI through multilayer functional connectivity. BIOMAG 2022. **Poster presentation**
- Centrality disruption in MCI using a cross-frequency approach. CIMEG V. **Oral presentation**
- **Taguas, I.**, Doval, S., Maestú, F., López-Sanz, D. Analysis of multilayer functional connectivity networks for the diagnosis of MCI. ICON 2022. **Poster presentation**

Education

Complutense University of Madrid – Faculties of Biology and Psychology   **Sept 2021 – July 2022**
Master's degree in Neuroscience, Cognitive specialization
Thesis: Analysis of multilayer functional connectivity networks for the diagnosis of Mild Cognitive Impairment

Technical University of Madrid – School of Computer Engineering   **Sept 2019 – July 2020**
Master's degree in Computational Biology, Data Science specialization
Thesis: Mathematical modelization of disease propagation on spatial substrates
Highest honors in Semantic Technologies

Technical University of Madrid – School of Agricultural Engineering   **Sept 2015 – July 2019**
BSc degree in Biotechnology, Computational specialization
Thesis: Effect of the infection of *Albugo sp.* in wild populations of *Arabidopsis thaliana*
Highest honors in Mathematics I and II, Physics, Programming Fundamentals and Statistics

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Complementary Activities and Formation

Activities
- **Leisure time monitor** – Encouraged my creativity, teamwork, self-organization skills and compromise
- **Founding member and president of the association University Solidary Distribution** – Encouraged my leadership and interpersonal skills
- **Member of the board of directors of AsBioMad (Association of Biotechnologists from Madrid)** – Encouraged my ability to direct and organize events

Formation
- **Foundation Rafael del Pino** – Workshop From Science to Society 2023 (grant recipient)
- **ECNP** – ECNP Workshop 2023 (grant recipient)
- **Neuromatch** – 2022 Computational Neuroscience Summer School
- **EMBRACE European Project** – 2022 EMBRACE Summer School
- **Coursera** – Writing in the Sciences
- **SEPNECA** – Transcranial Electric and Magnetic Stimulation in Behavioral and Neuroimaging Studies; Scientific Article Writing and Statistical Analysis
- **Francisco de Vitoria University** – II Course in Training for Research on Non-Invasive Neuromodulation