is

Agustín Caputo Bugallo

PhD Student ·

acaputobugallo@gmail.com

Education

University of Buenos Aires

Ph.D. in Computer Science (Applied to Socio-Economic systems) *August 2024 – Present*

- **Thesis Title:**
  Development of Formal Languages and Simulation Tools for Agent Control with Application to Socio-Economic Systems.
  (Focus: Economic optimization in urban mobility and smart cities).
- **Research Interests:** Hybrid dynamic systems, machine learning, optimization of economic outcomes, IoT in urban environments.
- **Director:** Prof. Rodrigo Castro

Universidad Nacional de La Plata

Lic. (Bachelor + Masters degree) in Physical Sciences with Focus on Computational Modeling *2017 - 2023*

- **Academic GPA:** 9.40/10
- **Thesis:**
  Characterization of Systems via Short-Time Statistics
  (Focus: Computational analysis of complex systems).

Research Experience

PhD Student CONICET - ICC (August 2024 - Present) Development of Formal Languages and Simulation Tools for Agent Control with Application to Socio-Economic Systems. **Current research projects**:

- Nowcasting of weekly economic indicators using Machine Learning/ Deep Learning Techiques via upsampled monhtly economic data and mixed frecuency data from diverse datasets.
- Agent Based Model calibration using multi-modal black-box optimization algoritms that are robust to noise (Covariance matrix adaptation evolution strategy (CMA-ES))

Research Assistant (National University of San Martín - CEMSC3) (March 2022 - August 2023) Collaboration in data analysis of neuronal dynamics as part of the NIH project: Reading and Controlling the Neural Codes of the Brain.

- Dimensionality reduction of experimental data and application of machine learning models to predict behavioral patterns encoded in neuronal activity.
- Developed metrics to compare the behavior of Agent Based Models to experimental data focusing on spatial and temporal correlations

Private Sector Experience

Data Scientist (CID - APER) Product Ranking Service for Online Stores (March 2024 - August 2024) A project driven by the Interinstitutional Center for Data Science (CID) in collaboration with the company APER, focused on developing a re-ranking algorithm based on natural language processing (NLP) for various online stores. The objective is to apply advanced machine learning techniques in combination with traditional ranking algorithms to provide product lists ordered as efficiently and accurately as possible.

Courses and Schools Attended

March 2024 - July 2024	**Course Attended:** , **Simulations of Economic Models** (Course taught at ICC - UBA by Prof. Rodrigo Castro, aimed at introducing computational techniques for modeling economic systems.)	*Duration: 45 hours*
January 2023	**Summer School Attended:**, **Latin American Summer School in Computational Neuroscience - LACONEU 2023** (Summer School held at the University of Valparaíso, Chile, aimed at undergraduate and doctoral students.)	*Duration: 2 weeks*
July 2022	**Course Attended:** , **Agent-Based Modelling and Simulation for Macroeconomic Systems:** Course taught by Andrea Roventini from Scuola Superiore Sant'Anna during ECI	*Duration: 15*

May 2023	**(Poster) Characterization of Spatial Correlations through Short-Time Statistics**, TREFEMAC - UTN Los Reyunos
April 2023	**(Talk) Fractal Dimension as a Criticality Metric**, Annual Meeting of CEMSC3 (Center for Multidisciplinary Studies in Complex Systems and Brain Sciences) 2023
July 2021	**(Poster) Simulation and Forecasting of Traffic Incidents**, Meeting of the Argentine Physics Association

Languages

Spanish	**Native**,
English	**Advanced B2**,