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Tristan Bersoux

PhD Candidate - Agent Based Modelling

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Paris (75), France

PhD candidate in agent-based modelling at LIP6 (Sorbonne Université), developing TerraSim, a large-scale multi-agent simulation of the French economy with a detailed energy sub-model. I am seeking a research position to apply these methods to social-ecological systems, with a focus on adaptation, resilience, and biodiversity.

Experience

PhD Candidate **Nov. 2023 — Dec. 2026**
LIP6 - Sorbonne Université, MAS Group *Paris (75), France*
A Systemic Agent-Based Model for Analysing Energy Policies — Supervisors: J.-D. Kant, C. Herpson

- Extending TerraSim, an agent-based model of the French economy, with a detailed energy sub-model coupling power generation, demand, and grid dynamics, in a distributed Scala/Pekko architecture
- Refactored the simulation codebase to support macro/micro coupling patterns (encapsulation, substitutability), feeding a methodological paper on whole-economy + sectoral ABM design
- Built a synthetic population module aligning national microdata with model agents, for micro-level policy experiments at household and firm levels
- Designed and ran policy experiments at macro and micro levels for energy transition scenarios; model validation and calibration

Research Intern (M.Sc. thesis) **Feb. — Sep. 2023**
LIP6 - Sorbonne Université, MAS Group *Paris (75), France*

- Foundations of the TerraSim model, preparing the PhD project

Research Intern **Jun. — Sep. 2022**
LIP6 - Sorbonne Université, MAS Group *Paris (75), France*

- Automatic verification tool for multi-agent systems (Java/JADE)

Research Intern **Apr. — Jul. 2021**
Laboratoire des Sciences du Numérique de Nantes *Nantes (44), France*

- Benchmarking tools (C++) for outlier detection solutions

Publications

Conference papers

- J.-D. Kant, M. Franceschetti, T. Bersoux, C. Herpson. *MOSIMA: an Agent-based and Systemic Approach to Model and Simulate Complex Systems.* In Proceedings of the 16th International Conference on Simulation and Modeling Methodologies, Technologies and Applications
- T. Bersoux, M. Franceschetti, C. Herpson, J.-D. Kant (2024). *TerraSim: An Agent-Based Simulation for systemic policy evaluation. Application to electricity mix transition.* Presented at the 19th Social Simulation Conference (SSC 2024). hal-04902281

In preparation

- T. Bersoux, M. Franceschetti, C. Herpson, J.-D. Kant. *Bridging Whole-Economy Coverage and Sectoral Detail: A Taxonomy and Guidelines for Agent-Based Models.*

Teaching

Teaching assistant, *Sorbonne Université, Paris* 2023 – present

- Master-level course in Agent-Based Modelling (40h); Bachelor-level courses in Data Structures (40h) and Object-Oriented Programming (90h)

Education

M.Sc. Computer Science — Artificial Intelligence, Algorithms, Interaction, Decision Making, *Sorbonne Université, Paris (75), France* 2021–2023

- Multi-Agent Systems, Agent-Based Modelling, distributed AI, simulation of complex systems
- Machine Learning, Decision Methods (uncertainty, collective, multicriteria), Game theory, Logic

Training

Functional ecology, lectures by Sandra Lavorel, *Collège de France, Paris* 2026

Summer School: Resilience of Living Systems, *PE&RC Graduate School, Wageningen University & Research* 2025

Skills

Research methods	Agent-based modelling, large-scale multi-agent systems, model calibration and validation, ODD protocol, data analysis
Software engineering	Design patterns, OOP, functional programming, testing, distributed architectures, Git, CI/CD
Programming	Scala, Java, Python, C++, C, R, LaTeX, LLMs
Libraries & frameworks	Akka/Pekko, JADE, GAMA, NetLogo, NumPy, Pandas
Languages	French (native), English (fluent, C1)