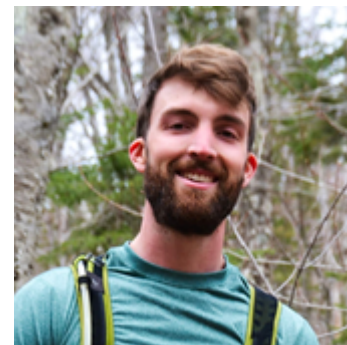


PATRICK GOVONI

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ACADEMIC RESEARCH

Institute for Theoretical Biology, Humboldt Universität, Berlin, Germany
Collective Information Processing Lab with Prof. Dr. Pawel Romanczuk

Apr. 2022 – Present

- **Doctorate Thesis** – “Evolving Visual Navigation Algorithms: Individual/Spatial & Social”
 - Simulation and evolution of artificial neural network controlled agents in minimal navigation tasks, comparing learned spatial and social behavior & mechanisms
 - Funded by the Elsa-Neumann-Stipendium (NaFöG), secured via independent grant application

Katholieke Universiteit Leuven, Leuven, Belgium

Nov. 2020 – Dec. 2022

Lab of Socioecology & Social Evolution with Dr. Piet van den Berg and Prof. Dr. Tom Wenseleers

- **MSc Group Project** – “Stigmergic Emergence of Task Partitioning in Leaf-Cutting Ants”
 - Simulated leaf-cutting ant foraging behavior via an agent-based model (ABM), mean-field reduction, an evolutionary algorithm, and a deterministic, transition-based approximation

Katholieke Universiteit Leuven, Leuven, Belgium

Sep. 2020 – Sep. 2021

Laboratory of Dynamics in Biological Systems with Prof. Dr. Lendert Gelens

- **MSc Thesis** – “Bistability and Traveling Front Dynamics in the Cell Cycle Regulator Protein, Aurora B Kinase”
 - Modeled kinase-phosphatase behavior in a reaction-diffusion-localization system via partial differential equations (PDEs), dynamical systems theory, and model order reduction

PUBLICATIONS

- Govoni, P. & Romanczuk, P. (2024). Visuospatial spatial navigation from the bottom-up: without vestibular integration, distance prediction, or maps. *ArXiv*. (Preprint).
- Govoni, P., Di Pietro, V., Chan, K. H., Oliveira, R. C., Wenseleers, T., & van den Berg, P. (2022). Evolution of self-organised division of labour driven by stigmergy in leaf-cutter ants. *Scientific Reports*, 12(1), 21971.
- Govoni, P. (2017, Sep. 1). An Overview of Vacuum System Design. *Chemical Engineering*, 124, 52-60.
 - Periodical, non-peer-reviewed

TALKS

- “Navigating a Crowded Foraging Patch”. Embodied Intelligence Conference, April 2026. Online.
- “Visuospatial Navigation from the Bottom-Up”. Embodied Intelligence Conference, April 2025. Online.
- “Fundamental Visual Navigation Algorithms”. ALife Conference, July 2024, IT University, Copenhagen, Denmark.
- “Foraging as Visual Navigation”. Spotlight Talks, SCIOI & ISAB Summer School, August 2023, Science of Intelligence, Berlin, Germany.
- “Understanding Vacuum Systems and Design”. Distinguished Speaker Seminar, National Engineers Week, February 2018, Northeastern University, Boston, MA, US. Invited by Dr. Thomas Webster.

POSTERS

- ALife Conference, October 2025, Kyoto, Japan
- Bernstein Conference on Computational Neuroscience (BCCN), September 2025, Frankfurt, Germany
- Elsa Neumann Colloquium Natural and Life Sciences, October 2024, Berlin, Germany
- ALife Conference, July 2024, IT University, Copenhagen, Denmark
- Computational Cognition Conference (ComCo), October 2023, Universität Osnabrück, Osnabrück, Germany
- Bernstein Conference on Computational Neuroscience (BCCN), September 2023, Berlin, Germany
- SCIOI & ISAB Summer School, August 2023, Science of Intelligence, Berlin, Germany
- Social Learning in Complex Systems, 6th ESLR, July 2023, MPI for Human Development, Berlin, Germany

EDUCATION

Katholieke Universiteit Leuven, Leuven, Belgium Sep. 2019 – Sep. 2021
M.Sc. in Biophysics, Biochemistry and Biotechnology, cum laude

KEY COURSES: Theoretical Modeling in Biology, Computational Biology, Complex Systems Modeling, Physical (Bio)Chemistry, Biotechnical Process Control, Mechanisms of Signal Transduction and Regulation

Rensselaer Polytechnic Institute, Troy, NY, US Sep. 2010 – May 2014
B.Sc. in Chemical Engineering, cum laude

KEY COURSES: From Single Molecules to Complex Fluids, Thermodynamics, Transport Phenomena

Nanyang Technological Institute, Singapore Jan. 2013 – Jun. 2013
Exchange Student, REACH Program

INDUSTRY EXPERIENCE

Sanofi Genzyme, Framingham, MA, US Dec. 2017 – Sep. 2019
Process Development Engineer, Upstream

- Devised and ran high cell density, perfusion-based, mammalian cell processes (CHO), developed new scale-down model (3L) to replicate pilot-scale (100L), optimized process control regulation

DPS Group Global, Framingham, MA, US May 2016 – Dec. 2017
Process Design Engineer

DSM Coating Resins, Wilmington, MA, US Aug. 2014 – May 2016
Production Engineer – Polyurethane Dispersions

ORGANIZATIONS, SKILLS, INTERESTS

International Society of Pharmaceutical Engineers, Boston Area Chapter Jan. 2015 – Sep. 2019
Educational Planning Committee

- Panel Moderator & Program Manager. “Mutual Success: The Sexy Approach to Project Delivery”. Amgen, Cambridge, MA, US. 17 May 2018.

PROGRAMMING SKILLS: Python, Julia, Matlab

INTERESTS: Cooking, Dancing, Rock Climbing, Hiking, Whistling, Personality/Culture/Anthropology Theory