

Education

Since 2022 Postdoctoral Researcher,
IRIDIA, Université Libre de Bruxelles, Belgium.

Topic: An Economy for Coordinating Robot Swarms via Blockchain Smart Contracts
Supervisor: Prof. Marco Dorigo

2016 – 2022 Ph.D. Candidate,
IRIDIA, Université Libre de Bruxelles, Belgium.

Thesis: Blockchain-based Smart Contracts for the Secure Coordination of Robot Swarms
I successfully defended my thesis on April 25, 2022.
Supervisor: Prof. Marco Dorigo

2014 – 2016 Artificial Intelligence (M.Sc.),
Radboud University, Nijmegen, Netherlands.

I pursued my degree at two universities:
– Radboud University (56 ECTS) and
– TU Delft (64 ECTS) as a visiting student in **Computer Science (M.Sc.)**.
Grade: Cum Laude (Dutch grading)
Thesis: Machine Learning-based Indoor Localization for Micro Aerial Vehicles
Supervisors: Prof. Guido de Croon (TU Delft) and Prof. Louis Vuurpijl (Radboud University)

2010 – 2014 Cognitive Science (B.Sc.),
University of Tübingen, Germany.

Grade: Sehr gut (German grading)
Thesis: MyPDDL – A Modular Framework for the Planning Domain Definition Language
Supervisors: Prof. Alexandra Kirsch and Prof. Martin Butz

2007 – 2010 Investment Fund Specialist (German Dual Apprenticeship),
Deutsche Asset & Wealth Management Investment GmbH, Frankfurt, Germany.

I learned and applied the skills around the investment fund business (trading, transactions, marketing) at one of the largest European asset management companies.
Grade: Sehr gut (German grading)

Research visits

2018 **Massachusetts Institute of Technology,**
MIT Media Lab, Cambridge, Massachusetts, U.S.A.

During two months at MIT, I collaborated with blockchain experts in the context of my Ph.D. thesis work.

Supervisors: Prof. Alex 'Sandy' Pentland and Dr. Eduardo Castelló Ferrer

2015 – 2016 **TU Delft,**
MAVLab, Aerospace Engineering, Delft, Netherlands.

For my graduation project and M.Sc. thesis, I developed an algorithm for efficient indoor localization of micro aerial vehicles.

Supervisor: Prof. Guido de Croon

Languages

Language levels according to the Common European Framework of Reference for Languages (CEFR)

German Native language

English Professional proficiency (C1)

Dutch Advanced proficiency (B2)

French Basic conversational level (A2)

Scholarships and Prizes

2021 Research prize *Prix Van Buuren-Jaumotte-Demoulin* awarded by the Fondation Jaumotte-Demoulin and the Fonds David et Alice Van Buuren to final-year Ph.D. candidates whose research demonstrates excellent scientific quality.

2018 My research stay at MIT Media Lab was co-funded by the Office of Naval Research Global and a travel grant from the F.R.S.-FNRS.

2017 I was accepted for a full Ph.D. grant (F.R.S.-FNRS Aspirant Research fellowship) of the Belgian National Science Foundation.

Editorial activities

Book co-editor Proceedings of the conferences ANTS 2020 and ANTS 2022

Board member Frontiers in Robotics and AI: Computational Intelligence in Robotics

Reviewer *Journals:* Frontiers in Robotics and AI, IEEE Computer Magazine, IEEE Robotics and Automation Letters, International Journal of Blockchains and Cryptocurrencies, Ledger, and Swarm Intelligence
Conferences: BROS 2018, PPSN 2018, ICRA 2019, ICRA 2021, DARS 2022

Co-chair Paper submission chair for the conferences ANTS 2018 and ANTS 2020
Publication chair for the conferences ANTS 2022

Full list of publications

My publications were cited more than 300 times according to Google Scholar.

Book co-editor

- [EB02] Dorigo, M., H. Hamann, M. López-Ibañez, J. García-Nieto, A. Engelbrecht, **V. Strobel**, & C. Camacho-Villalón, Editors (2022). *Swarm Intelligence – 13th International Conference, ANTS 2022, Proceedings*. LNCS 13491. Cham, Switzerland: Springer.
- [EB01] Dorigo, M., T. Stützle, M.J. Blesa Aguilera, C. Blum, H. Hamann, M.K. Heinrich, & **V. Strobel**, Editors (2020). *Swarm Intelligence – 12th International Conference, ANTS 2020, Proceedings*. LNCS 12421. Cham, Switzerland: Springer.

Journal articles

- [J01] **Strobel V.**, E. Castelló Ferrer, & M. Dorigo (2020). Blockchain Technology Secures Robot Swarms: A Comparison of Consensus Protocols and Their Resilience to Byzantine Robots. *Frontiers in Robotics and AI*, 7: 54.

Book chapters

- [C01] **Strobel V.** & A. Kirsch (2020). MyPDDL: Tools for Efficiently Creating PDDL Domains and Problems. In *Knowledge Engineering Tools and Techniques for AI Planning*, Springer, Cham, Switzerland, 67–90.

Conference papers

- [P06] Pacheco A., **V. Strobel**, A. Reina, & M. Dorigo (2022). Real-time coordination of a foraging robot swarm using blockchain smart contracts. In *Swarm Intelligence – Proceedings of ANTS 2022 – 13th International Conference*, Vol. 13491 of Lecture Notes in Computer Science (LNCS). Springer, Cham, Switzerland, in press.
- [P05] Pacheco A., **V. Strobel**, & M. Dorigo (2020). A Blockchain-Controlled Physical Robot Swarm Communicating via an Ad-Hoc Network. In *Swarm Intelligence – Proceedings of ANTS 2020 – 12th International Conference*, Vol. 12421 of Lecture Notes in Computer Science (LNCS). Springer, Cham, Switzerland, 3–15.
- [P04] **Strobel V.** & M. Dorigo (2018). Blockchain Technology for Robot Swarms: A Shared Knowledge and Reputation Management System for Collective Estimation. In *Swarm Intelligence – Proceedings of ANTS 2018 – 11th International Conference*, Vol. 11172 of Lecture Notes in Computer Science (LNCS). Springer, Cham, Switzerland, 425–426.
- [P03] **Strobel V.**, E. Castelló Ferrer, & M. Dorigo (2018). Managing Byzantine Robots via Blockchain Technology in a Swarm Robotics Collective Decision Making Scenario. In *Proceedings of the 17th Conference on Autonomous Agents and MultiAgent Systems (AAMAS 2018)*. Int. Foundation for Autonomous Agents and Multiagent Systems, Richland, SC, USA, 541–549.
- [P02] **Strobel V.**, R. Meertens, & G.C.H.E. de Croon (2017). Efficient Global Indoor Localization for Micro Aerial Vehicles. In *Proceedings of the 9th International Micro Air Vehicle Conference and Flight Competition (IMAV 2017)*.
- [P01] **Strobel V.** & A. Kirsch (2014). Planning in the Wild: Modeling Tools for PDDL. In *Proceedings of KI 2014 – 37th Annual German Conference on Artificial Intelligence (Lecture Notes in Artificial Intelligence)*, Vol. 8736 of Lecture Notes in Computer Science (LNCS). Springer, Cham, Switzerland, 273–284.

Technical reports

- [R01] Pacheco A., **V. Strobel**, & M. Dorigo (2020). A Framework for Swarm Robotics Experimentation with Pi-puck Robots and an Ethereum-based Blockchain. *Technical Report TR/IRIDIA/2020-001*, IRIDIA, Université Libre de Bruxelles, Brussels, Belgium.

Theses

- [T03] **Strobel V.** (2022). Blockchain-based Smart Contracts for the Secure Coordination of Robot Swarms. *Ph.D. Thesis*, Université Libre de Bruxelles, Belgium.
- [T02] **Strobel V.** (2016). Machine Learning-based Indoor Localization for Micro Aerial Vehicles. *M.Sc. Thesis*, Radboud University, Netherlands.
- [T01] **Strobel V.** (2014). MyPDDL – A Modular Knowledge Engineering Tool for PDDL. *B.Sc. Thesis*, University of Tübingen, Germany.