



Nicolas Perony

Professional experience (more details on [LinkedIn profile](#))

- 08.2017-present **Co-Founder, CTO**, *OTO.ai*, Zurich/New York/Lisbon.
- 08.2016-07.2017 **Team Lead Data Science & AI**, *Hyperloop TT*, Los Angeles.
- 08.2015-07.2016 **Data Scientist**, *Hyperloop TT*, Los Angeles.
- 12.2015-present **Co-Founder**, *Slow Motion Projects* (NGO), Zurich/New Delhi/Thimphu.
- 02.2015-03.2016 **Data Scientist**, *Tamedia Digital*, Zurich.
- 07.2014-03.2016 **Co-Founder, Head of Research & Analytics**, *ECUREX*, Zurich.
- 01.2014-01.2015 **Lecturer** (*Dozent*), *ETH Zurich*, *D-MTEC*.
- 12.2014-01.2015 **Invited researcher**, *Wissenschaftskolleg zu Berlin*; *Indiana & Greifswald Universities*.
- 04.2012-12.2014 **Postdoctoral research associate**, *ETH Zurich*, *Chair of Systems Design*.

Advisory experience

- 09.2017-present **Advisor**, Natural Language Processing, *reportics.ai*.
- 09.2017-present **Advisor**, Data Science & AI, *Hyperloop TT*.
- 06.2017-12.2019 **Advisor**, Data Strategy, *Oyoba*.
- 05.2017-present **Advisor**, Data Science, *Propulsion Academy*.

Education

- 2008–2012 **Ph.D.**, Complex Systems & Data Mining, *ETH Zurich*, Switzerland.
Topic: *Comparative analysis of social interactions in animal groups*. Supervisor: Prof. Frank Schweitzer. Thesis awarded the ETH medal in January 2013.
- 2003–2008 **B.Eng. and M.Eng./M.Sc.**, *INSA Toulouse*, France.
Degree in Electrical Engineering, specialised in Electronics & Embedded Systems. M.Sc. project at the University of Zurich (with Prof. Marta Manser). Final grade: 17/20 (US A equivalent).
- 2003 **Baccalauréat**, *Toulon*, France.
Scientific Series, specialised in Mathematics. Final grade: *Très bien (Highest Honours)*.

Interests & skills

- Research interests **Data Mining & Pattern recognition:** Automatic extraction of knowledge from large, unstructured data sets; (Un)Supervised learning for classification and prediction; Natural language processing; Signal processing; Experimental design and hypothesis testing.
Social complexity & Collective behaviour: Structure and dynamics of interaction in complex societies; Large-scale modelling of social dynamics; Social network analysis and pattern characterisation; Collective intelligence and group decision making.
- Technical skills Machine learning workflows; Distributed system design; DevOps. Languages/frameworks: Python/PyData, TensorFlow, Bash, SQL, Java, \LaTeX .
- Business skills Team player and leader, able to supervise and coach employees, independently lead projects, organise and conduct meetings & discussions, clearly present results and distil complex notions, address large audiences, write proposals and management reports.

Griesernweg 50 – 8037 Zurich, Switzerland

☎ +41 76 242 32 26 • ✉ nicolas.perony@gmail.com

[LinkedIn: nicolasperony](#) [Twitter: @nicolasperony](#)

Awards & grants

- 2016 Tamedia Data Analytics Excellency Award, honorary prize given by the CTO.
- 2015 Grant of the Swiss National Science Foundation for Interdisciplinary Research, with K. Aminian (EPF Lausanne) and A. Ozgul (University of Zurich): CHF 700'000 (declined).
- 2014 Popular science talk "The secret social lives of bats" selected as TED talk of the day.
- 2013 ETH Zurich medal awarded for doctoral thesis. CHF 1'500 cash prize.
- 2012 Grant of the Swiss National Science Foundation for Interdisciplinary Research, with F. Schweitzer (ETH Zurich) and B. König (University of Zurich): CHF 492'111.
- 2010 2nd best paper award at ECCS'10 (European Conference on Complex Systems), for the paper *A stochastic model of social interaction in wild house mice*. EUR 200 cash prize.
- 2008 Master thesis selected among the 10 best (out of 400) at INSA Toulouse, for the work *GPS tracking and heart rate monitoring in meerkats: a technical approach*.

Teaching experience

- 2019-2020 **Analysis of Social Interactions**, *HSLU*, Course organiser & lecturer, *MSc IDS*.
- 2018-2019 **Machine Learning**, *Propulsion Academy*, Lecturer, Supervised learning.
- 2017-2018 **Data Science Toolkit**, *Propulsion Academy*, Lecturer, Data science stack, focused on using Python and NumPy for modelling applications.
- Spring 2016-
Spring 2017 **Data Science for Sustainable Development**, *Slow Motion Projects*, Lecturer, Various courses & workshops (on Data Science, Machine Learning) in China/India/Bhutan.
- Autumn 2015 **Bitcoin: Evolution or Revolution?**, *HWZ*, Lecturer, *CAS Disruptive Technologies*.
- Spring 2014 **Agent-Based Modelling of Social Systems**, *ETH Zurich*, Lecturer, *D-MTEC*.
- Spring 2014 **Animal Behaviour**, *University of Zurich*, Lecturer & coordinator, *IEU*.
- Spring 2010 **Complex Adaptive Systems**, *ETH Zurich*, Teaching assistant, *D-MTEC*.

Academic activities

- Publications 14 peer-reviewed publications (2011-2014). As of Nov. 2020: 668 citations, h-index 7. **Google Scholar profile**.
- Reviewer for Institutions: *German Research Foundation*, *Springer*; Journals: *PLOS Computational Biology*, *Proceedings of the Royal Society B*, *Journal of the Royal Society Interface*, *PLOS ONE*, *Animal Behaviour*, *Behavioral Ecology and Sociobiology*, *Ethology*, *Ecological Modelling*; Conferences: *International Conference on Agents and Artificial Intelligence (ICAART)*, *Conference on Complex Systems (CCS)*, *SocialSimulation*.
- Organiser of Conference "Peer-to-Peer Financial Systems", Deutsche Bundesbank, Jan. 2015. Workshop "Quantitative Analysis of Collective Behaviour", Princeton Univ., Aug. 2014.

Outreach activities



- 2016-2017 Volunteering work on science-based environmental education projects covering sustainability, conservation, and data science in developing regions of Asia.
- 2013-2015 Invited popular science talks on complexity and data science at TEDxZurich and TEDx-Gateway (Mumbai), one featured in the TED.com collection. Over 1M viewers.
- 2010-2014 Work covered in public media such as BBC, ScienceNOW, Discovery News, Smithsonian Magazine, New Scientist, ABC Science, MSNBC, ScienceNews, The Daily Mail...

Personal information

- Personal details French citizen (Swiss C permit). Born on November 22, 1986. Unmarried.
- Languages English (fluent), French (native), German (proficient/C1), Italian (conversational).

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Publications & Talks

Scientific talks

2008-2015 Over 50 invited lectures, seminars and conference presentations.
[Detailed list](#) (archive).

Publications

Books & book chapters

- [17] Tomaso Aste, Lorian Pelizzon, Paolo Tasca, and Nicolas Perony, editors. *Banking Beyond Banks and Money*. Springer, 2016.
- [16] Cédric Sueur, Sebastian Sosa, and Nicolas Perony. De l'utilité de l'analyse des réseaux sociaux dans l'étude du comportement animal. In Cédric Sueur, editor, *Analyse des réseaux sociaux appliquée à l'éthologie et l'écologie*, chapter 1, pages 21–48. Editions Matériologiques, Paris, 2015.
- [15] Nicolas Perony, Cédric Sueur, and Gerald Kerth. La socialité complexe des chauves-souris. In Cédric Sueur, editor, *Analyse des réseaux sociaux appliquée à l'éthologie et l'écologie*, chapter 7, pages 205–232. Editions Matériologiques, Paris, 2015.
- [14] Cédric Sueur, Nicolas Perony, Frédéric Amblard, and Jean-Loup Guillaume. Modélisation des réseaux sociaux. In Cédric Sueur, editor, *Analyse des réseaux sociaux appliquée à l'éthologie et l'écologie*, chapter 15, pages 423–444. Editions Matériologiques, Paris, 2015.

Preprints

- [13] Nicolas Perony, Gerald Kerth, and Frank Schweitzer. Data-driven modeling of group formation in the fission-fusion dynamics of bechstein's bats. *bioRxiv*, page 862219, 2019.
- [12] Thomas O. Richardson*, Nicolas Perony*, Claudio J. Tessone, Christophe A.H. Bousquet, Marta B. Manser, and Frank Schweitzer. A framework for extracting pairwise coupling information during collective animal motion. Submitted (arXiv preprint: 1311.1417), 2014.

Peer-reviewed journal articles

- [11] David Garcia, Claudio J. Tessone, Pavlin Mavrodiev, and Nicolas Perony. The digital traces of bubbles: Feedback cycles between socio-economic signals in the Bitcoin economy. *Journal of the Royal Society Interface*, 11(99):20140623, 2014.
- [10] Yannick Auclair, Barbara Koenig, Manuela Ferrari, Nicolas Perony, and Anna K. Lindholm. Nest attendance of lactating females in a wild house mouse population: Benefits associated with communal nesting. *Animal Behaviour*, 92:143–149, 2014.
- [9] Nicolas Perony, Rene Pfitzner, Ingo Scholtes, Claudio J. Tessone, and Frank Schweitzer.

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Enhancing consensus under opinion bias by means of hierarchical decision making. *Advances in Complex Systems*, 16:1350020, 2013.

- [8] Anja Baigger, Nicolas Perony, Vera Leinert, Markus Melber, Stefanie Grunberger, Daniela Fleischmann, and Gerald Kerth. Bechstein's bats maintain individual social links despite a complete reorganisation of their colony structure. *Naturwissenschaften*, 100(9):895–898, 2013.
- [7] Miroslav Svercel*, Manuela Filippini*, Nicolas Perony*, Valentina Rossetti, and Homayoun C. Bagheri. Use of a four-tiered graph to parse the factors leading to phenotypic clustering in bacteria: a case study based on samples from the aletsch glacier. *PLOS ONE*, 8(5):e65059, 2013.
- [6] Nicolas Perony and Simon W. Townsend. Why did the meerkat cross the road? flexible adaptation of phylogenetically-old behavioural strategies to modern-day threats. *PLOS ONE*, 8(2):e52834, 2013.
- [5] Nicolas Perony, Claudio J. Tessone, Barbara Koenig, and Frank Schweitzer. How random is social behaviour? disentangling social complexity through the study of a wild house mouse population. *PLOS Computational Biology*, 8(11):e1002786, 2012.
- [4] Gerald Kerth*, Nicolas Perony*, and Frank Schweitzer. Bats are able to maintain long-term social relationships despite the high fission-fusion dynamics of their groups. *Proceedings of the Royal Society B: Biological Sciences*, 278(1719):2761–2767, 2011.

Peer-reviewed conference proceedings

- [3] Nicolas Perony, Rene Pfitzner, Ingo Scholtes, Frank Schweitzer, and Claudio J. Tessone. Hierarchical consensus formation reduces the influence of opinion bias. In *ECMS 2012 - Proceedings of the 26th European Conference on Modelling and Simulation*, pages 662–668, 2012.
- [2] Nicolas Perony, Thomas R. Richardson, Marta B. Manser, and Frank Schweitzer. "Take me to your leader!": Inferring leadership in animal groups on the move. In *Proceedings of the Thirteenth International Conference on the Simulation and Synthesis of Living Systems (Artificial Life 13)*, pages 594–595. MIT Press, 2012.
- [1] Nicolas Perony, Barbara Koenig, and Frank Schweitzer. A stochastic model of social interaction in wild house mice. In *Proceedings of the European Conference on Complex Systems 2010*, 2010.

Theses

Nicolas Perony. *Comparative analysis of social interactions in animal groups*. PhD thesis, ETH Zurich, 2012. DOI: 10.3929/ETHZ-a-007159348.

Nicolas Perony. GPS tracking and heart rate monitoring in meerkats: A technical approach. Master's thesis, National Institute for Applied Sciences (INSA) of Toulouse, 2008.

*Joint first authorship

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