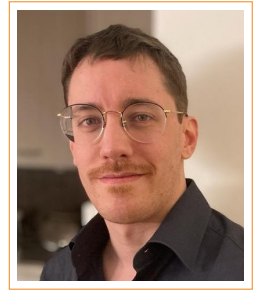


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Matteo Tomasini

Summary

I am an enthusiastic research software engineer working in digital humanities, and previously active for years in the theoretical realm of evolutionary biology. My main interest is to support researchers in developing new computational tools and data analysis pipelines. I have a keen eye for using the right methods for each problem at hand. My toolbox is particularly well suited for agent-based simulations and back end development, as well as mathematical modelling and statistical analysis. I am also involved in the dissemination of good programming practices in academia, as well as in the development of the careers of research software engineers in the Nordics.

Skills

Simulations, programming, (Python, R, C++, Matlab), I developed various population- and individual-based simulations to address questions in population genetics and climatology.

Backend development, (Django), I currently help maintaining the back end platform in use in my department, which is based in Django. I also develop new Django apps for different uses.

Statistical analysis, (Python, R, Stan), I performed statistical analysis on simulations outputs and datasets using different methodologies, including Bayesian inference and machine learning. I further worked towards the development of a statistical method to extract information from genomic datasets. I also taught applied biostatistics to master students.

Mathematical and numerical modelling, (Wolfram Mathematica), I worked on several mathematical models to study selected questions in population genetics and climatology.

Scientific writing, (\LaTeX , Word), I wrote several papers exposing the research results from my team, and published them in international peer-reviewed journals.

Scientific dissemination, I contributed during 10 years to the growth of one of the largest Facebook pages about popular science in Italian.

Management, I am the assigned manager for projects involving scientific visualization. I also organize seminars and conferences for the Nordic RSE association. In the past, I was responsible for the logistics of a unit during my military service in Switzerland.

Experience

Current employment

Nov 2022 – Present **Research engineer**, *Gothenburg Research Infrastructure in Digital Humanities, Göteborgs Universitet, Sweden*

Responsible for agent-based oceanographical simulations to study maritime migration in Atlantic Europe during the Bronze Age, as well as the maintenance of back end solutions for several projects in the humanities.

Feb 2023 – Present **Application expert, InfraVis, Sweden**

I have management and development tasks within the Swedish national infrastructure for scientific visualization, InfraVis (25% employment).

Past employment

Mar 2021 – Oct 2022 **Postdoctoral research fellow, Department of Marine Sciences, Göteborgs Universitet, Sweden**

I modelled evolutionary mechanisms leading to the establishment of species' distributions in the Baltic Sea, using Python, C++ and Matlab.

Sep 2019 – Dec 2020 **Postdoctoral research associate, Department of Integrative Biology, Michigan State University, United States of America**

I worked on developing a Bayesian statistical method to harness genetic information for the inference of the demographic history of a species.

Feb 2015 – Jun 2019 **PhD student, Interfaculty Bioinformatics Unit, Universität Bern, Switzerland**

I developed mathematical models and simulations in Python to study the rapid adaptation of species at risk of extinction in a spatially structured model.

Teaching

Sep 2022 **Course co-leader, Software testing, CodeRefinery**

Co-teaching a course about automated testing during the yearly CodeRefinery workshop.

Sep 2017 – Jun 2019 **Substitute lecturer, Applied Biostatistics I and II, Universität Bern**

Substitution of main lecturer in case of absence.

Sep 2015 – Jun 2019 **Teaching assistant, Applied Biostatistics I and II, Universität Bern**

Management of exercise sessions and support for MSc students, correction of exercise sheets.

Sep 2015, 2016, 2017 **Teaching assistant, Introduction to R, Universität Bern**

and 2018 Teaching assistant during a 5 days introductory course to the R language.

Education

Feb 2015 – Jun 2019 **PhD studies in ecology & evolution, Universität Bern, Switzerland**, Supervisors: Dr. S. Peischl and Prof. L. Excoffier

Relevant courses and workshops: best practices in programming, introduction to Markov models, machine learning. Thesis topic: theoretical population genetics.

Sep 2012 – Oct 2014 **MSc in physics (orientation theoretical physics), Université de Genève, Switzerland**

Thesis topic: theoretical climatology.

Sep 2009 – Aug 2012 **BSc in physics, Université de Genève, Switzerland**

Sep 2004 – Jun 2008 **Swiss Matura (classical curriculum), Liceo di Locarno, Switzerland**

Relevant courses: ancient Greek, Latin.

Academic achievements and activities

Peer-reviewed publications

3. **M. Tomasini**, S. Peischl, (2022), *The role of spatial structure in multi-deme models of evolutionary rescue*, Journal of Evolutionary Biology, 35(7), 986 – 1001
2. **M. Tomasini**, S. Peischl, (2020), *When does gene flow facilitate evolutionary rescue?*, Evolution, 74(8), 1640 – 1653
1. **M. Tomasini**, S. Peischl, (2018), *Establishment of locally adapted mutations under divergent selection*, Genetics, 209(3), 885 – 895

Submitted for publication

- 1a. **M. Tomasini**, M. Eriksson, K. Johannesson, M. Rafajlović (2022), *Shallow environmental gradients can cause range margins to form*, bioRxiv, <https://doi.org/10.1101/2022.03.19.484973>

Grants

- 9500 SEK (~866€) Kungliga Vetenskaps- och Vitterhets-Samhället i Göteborg (KVVS) Stipendium 2022
- 750€ International Council for the Exploration of the Sea (ICES) Early Career Scientist funding, Baltic Sea Science Congress 2021
- Rejected with Seal of Excellence *The evolution of marine species in continuous space*, Marie Skłodowska-Curie Actions – Individual Fellowship 2020, Evaluation Score: 90.40%

Selected oral contributions

- Oct 2022 *Fight or flight? The role of adaptation in shaping future species' distributions in light of climate change (featured session)*, YOUMARES 13, Berlin, Germany
- Aug 2022 *How do species ranges respond to the effects of counteracting environmental gradients?*, European Society for Evolutionary Biology Congress 2022, Prague, Czech Republic
- Oct 2021 *Range expansions along multiple environmental gradients*, Baltic Sea Science Congress 2021, Aarhus, Denmark
- Jun 2019 *Effects of gene flow and fragmentation on evolutionary rescue*, Modelling Ecology & Evolution Zurich 2019, Zurich, Switzerland

Committees

- Oct 2022 – present Board chair, Nordic Research Software Engineers association
- Oct 2021 – Feb 2023 Steering committee, Linnaeus Centre for Marine Evolutionary Biology, University of Gothenburg

Memberships

- May 2022 – present Nordic Research Software Engineers association
- Apr 2021 – present Linnaeus Centre for Marine Evolutionary Biology, University of Gothenburg
- Mar 2015 – Jul 2019 Swiss Institute of Bioinformatics

Unpaid research experience

- Sep 2013 – Oct 2014 **MSc thesis**, *Effect of snow covering and ocean mixed layer on the irreversibility of sea ice retreat*, Institut des Sciences de l'Environnement, Université de Genève, Supervisors: Dr. M. Brunetti and Dr. S. Marshall
- Feb 2012 **BSc short thesis**, *Measures of polarization of the solar light around the Balmer Jump*, Istituto Ricerche Solari Locarno and Université de Genève, Supervisors: Dr. M. Bianda and Dr. M. Audard

Miscellaneous

Languages

written / spoken	Italian	Native language
written / spoken	French	Full professional working proficiency
written / spoken	English	Full professional working proficiency
spoken	German	Limited working proficiency
written / spoken	Swedish	Base proficiency (Nationella prov i SFI, kurs C)

Other activities

- Mar 2012 – Mar 2022 **Co-admin**, *Meccanica Quantistica: gruppo serio*
Co-administrator and moderator of the largest Facebook page of quantum physics dissemination in Italian language (~ 34'000 subscribers).

Aug 2009 – Apr 2019 **Battery Sergeant Major, Swiss Armed Forces**

I was responsible for logistics in an artillery battery – in particular personnel, equipment, ammunition, health service and barracks administration – during the yearly one month service.

Nov 2015 – Jun 2018 **Head of refereeing, Swiss Tchoukball**

Head of the refereeing commission and member of the executive committee of the Swiss federation of tchoukball; I developed refereeing in the sport as well as worked on referees' formation.

Leisure activities

Endurance sports Regular practice of triathlon (2006–2020) and trail running (since 2021), with completion of several races up to half-ironman distance.

Visual astronomy Regular practice of visual astronomy as well as astronomy sketching.

Music Regular practice of piano playing since 1997; self-taught guitar player; I sang in 3 choirs between 2006 and 2015.