Matteo Tomasini

Research Engineer at Gothenburg Research Infrastructure in Digital Humanities   📍 University of Gothenburg, Sweden

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Summary

I am an enthusiastic research software engineer working in archaeology and digital humanities. In my employment I support researchers in the humanities in developing new computational tools, data pipelines and scientific visualizations. Additionally, I pursue my own research focusing on ancient navigation and on mechanisms of cultural transmission. I have a keen eye for using the right methods for each problem at hand. My toolbox is suited for agent-based modelling, back end development, data analysis, statistical and mathematical modelling, and more. 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

Agent-based modelling   Python

- I am actively developing and maintaining an ABM seafaring simulator.
- I developed various population- and individual-based simulations to address questions in cultural evolution, population genetics and climatology.

Research software development   Python, R, C++, Matlab; git

- I apply best practices to the development of the software I used for my research.
- I have experience with versioning, testing, documentation, and other processes in software engineering and development.

Statistical analysis   Python, R, Stan

- I performed statistical analysis on simulations outputs and datasets using different methodologies, including Bayesian inference and machine learning.
- I worked towards the development of a statistical method to extract information from genomic datasets.

Mathematical and numerical modelling   Wolfram Mathematica

- I worked on several mathematical models to study selected questions in population genetics and climatology.

Full-stack development   Django, PostgreSQL, REST; Vue; Sphinx

- I contribute to the development, deployment and maintenance of the backend for web platforms currently in use at my department.
- I contribute to the maintenance of the frontend for web platforms currently in use at my department.

Scientific writing   LaTeX, Word

- I wrote several papers exposing the research results from my team, and published them in international peer-reviewed journals.

Leadership and management

- I am the assigned manager for several projects involving scientific visualization.
- I organize seminars and conferences for the Nordic RSE association.
- I led and managed the logistics of an artillery battery during military service in Switzerland.

Scientific dissemination

- I regularly animated a booth at public outreach events in my current department, such as the local "Vetenskaps-

festivalen" (science festival in Gothenburg).
- I contributed during 10 years to the growth of one of the largest Facebook pages about popular science in Italian.

Experience

Gothenburg Research Infrastructure in Digital Humanities, Göteborgs Universitet, Research Engineer

Gothenburg, Sweden
Nov 2022 – Present

- I develop agent-based simulations to study seafaring in the Bronze Age.
- I am involved in the development of research web platforms in digital humanities.
- I co-manage operations within my department.

InfraVis, Application Expert (10% employment)

Gothenburg, Sweden
Feb 2023 - Present

- I develop and manage different products for external users within the Swedish national infrastructure for scientific visualization.

Department of Marine Sciences, Göteborgs Universitet, Postdoctoral research fellow

Gothenburg, Sweden
Mar 2021 - Oct 2022

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

Department of Integrative Biology, Michigan State University, Postdoctoral research associate

East Lansing, MI, USA
Sep 2019 - Dec 2020

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

Interfaculty Bioinformatics Unit, Universität Bern, PhD student

Bern, Switzerland
Mar 2015 - Jul 2019

- I developed mathematical models and simulations in Python to study the rapid adaptation of species at risk of extinction in a spatially structured model.
- I taught biostatistics to student at the master level (as teaching assistant and substitute lecturer).

Teaching experience

Basics of R and visualization in R, Course leader

InfraVis
Sep 2022

- Internal course to InfraVis application experts to introduce them to R and using visualization tools in R (including tidyverse and ggplot2).

Software testing, Course co-leader

CoreRefinery
Sep 2022

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

Applied Biostatistics I and II, Substitute lecturer

Universität Bern
Sep 2017 - Jun 2019

- Substitution of main lecturer in case of absence.

Applied Biostatistics I and II, Teaching Assistant

Universität Bern
Sep 2015 - Jun 2019

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

Introduction to R, Teaching Assistant

Universität Bern
Sep 2015, 2016, 2017, 2018

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

Education

PhD **Universität Bern**, Ecology and Evolution

Mar 2015 – Jun 2019

- **Thesis topic:** theoretical population genetics
- **Supervisors:** Dr. S. Peischl and Prof. L. Excoffier
- **Relevant coursework:** Best Practices in Programming, Introduction to Markov Models, Machine Learning

MSc	**Université de Genève**, Physics (orientation: theoretical physics)	Sep 2012 – Oct 2014
	• **Thesis topic:** theoretical climatology	
BSc	**Université de Genève**, Physics	Sep 2009 – Aug 2012
	Liceo di Locarno, Swiss Matura Exam (classical curriculum)	Sep 2012 – Oct 2014
	• **Relevant coursework:** ancient Greek, Latin.	

Academic achievements and activities

Peer-reviewed publications

J. Rieder, M. Jahnke, …, **M. Tomasini**, F. A. M. Volckaert (*in press*), *Seascape genomics: assisting marine biodiversity management by combining genetic knowledge with environmental and ecological information*, Marine Policy

B. Bengtsson, A. Montenegro, A. Green, **M. Tomasini**, M. Prince, V. Wåhlstrand Skärström, K. I. Austvoll, J. Ling, C. Lindhé (2025), *Seafaring and navigation in the Nordic Bronze Age: The application of an ocean voyage tool and boat performance data for comparing direct open water crossings with sheltered coastal routes*. PLOS One. 10.1371/journal.pone.0320791 ✇

J. Westin, T. Bridge, **M. Tomasini** (2024), *From the Arctics to Antarctica – A multimodular visualisation of data*. Proceedings of the Huminfra Conference (HiC 2024), 135 – 140. 10.3384/ecp205018 ✇

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. 10.1111/jeb.14018 ✇

M. Tomasini, S. Peischl (2020), *When does gene flow facilitate evolutionary rescue?*, Evolution, 74(8), 1640 – 1653. 10.1111/evo.14038 ✇

M. Tomasini, S. Peischl (2018), *Establishment of locally adapted mutations under divergent selection*, Genetics, 209(3), 885 – 895. 10.1534/genetics.118.301104 ✇

Software and web applications

J. Westin, T. Bridge, **M. Tomasini** (2025), *Etruscan Chamber Tombs* (Version 1.0) [Web portal]. https://etruscan.dh.gu.se/ ✇.

J. Westin, T. Bridge, **M. Tomasini**, A. Green, A. Karimi (2024), *Saint Sophia's Inscriptions* (Version 1.1) [Web portal]. https://saintsophia.dh.gu.se/ ✇.

Pre-prints

M. Tomasini, M. Eriksson, K. Johannesson, M. Rafajlović (2022), *Shallow environmental gradients can cause range margins to form*, bioRxiv, 10.1101/2022.03.19.484973 ✇

Grants

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

Selected oral contributions

Pytheas: a fast and agile ABM software for the study of ancient seafaring, CAA International Conference 2025, Athens, Greece (with A. Montenegro, B. Bengtsson)	May 2025
What can metapopulation models say about maritime connectivity in ancient times?, Kiel Conference 2025, Kiel, Germany (with M. Vander Linden)	Mar 2025
Session: **Evolution.**, Theoretical Archaeology Group 2024, Bournemouth, United Kingdom (with M. Vander Linden, E. Crema)	Dec 2024

From the Arctics to Antarctica – A multimodular visualisation of data, Huminfra Conference, Gothenburg, Sweden (with T. Bridge, J. Westin)	Jan 2024
Featured session: **Fight or flight? The role of adaptation in shaping future species' distributions in light of climate change**, YOUMARES 13, Berlin, Germany (with M. Eriksson)	Oct 2022
How do species ranges respond to the effects of counteracting environmental gradients?, European Society for Evolutionary Biology Congress 2022, Prague, Czech Republic (with M. Rafajlović, M. Eriksson, K. Johannesson)	Aug 2022
Range expansions along multiple environmental gradients, Baltic Sea Science Congress 2021, Aarhus, Denmark (with M. Rafajlović)	Oct 2021

Conference organization

Local organizing chair, Nordic-RSE 2025 Conference at University of Gothenburg, Gothenburg, Sweden	May 2025
Chair of organizing committee, Nordic-RSE 2024 Conference at Aalto University, Espoo, Finland	May 2024

Committees

Advocate, Dark Sky International	Jan 2025 - Present
Ambassador, CodeRefinery	Aug 2024 - Present
Board chair, Nordic-RSE	Oct 2022 - Present
Steering committee member, Linnaeus Centre for Marine Evolutionary Biology, University of Gothenburg	Oct 2021 - Feb 2023

Memberships

Computer Applications and Quantitative Methods in Archaeology (CAA)	Mar 2025 - Present
Nordic RSE (Research Software Engineers association)	May 2022 - Present
Linnaeus Centre for Marine Evolutionary Biology, University of Gothenburg	Apr 2021 - Apr 2025
Swiss Institute of Bioinformatics	Mar 2015 - Jul 2019

Unpaid research experience

MSc thesis, Institut des Sciences de l'Environnement, Université de Genève	Sep 2013 – Oct 2014

- **Thesis:** Effect of snow covering and ocean mixed layer on the irreversibility of sea ice retreat
- **Supervisors:** Dr. M. Brunetti and Dr. S. Marshall

BSc short thesis, Istituto Ricerche Solari Locarno and Départment d'Astronomie de l'Université de Genève	Feb 2012

- **Thesis:** Measures of polarization of the solar light around the Balmer Jump
- **Supervisors:** Dr. M. Bianda and Dr. M. Audard

Miscellaneous

Languages

Italian (Native language)	written / spoken
French (Bilingual proficiency)	written / spoken
English (Full professional working proficiency)	written / spoken
Swedish (Limited working proficiency)	written / spoken

German (Limited working proficiency)	spoken
Spanish (Base proficiency)	spoken

Other activities

Co-admin, *Meccanica Quantistica: gruppo serio* — Mar 2012 – Mar 2022

- Co-administrator and moderator of the largest Facebook page of quantum physics dissemination in Italian language ($\sim$ 34'000 subscribers).

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

- 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.

Head of refereeing, *Swiss Tchoukball* — Nov 2015 - Jun 2018

- 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.
- International tchoukball referee; highest honor was refereeing the European Championship finals in 2016.

Leisure activities

Endurance sports

- Regular practice of triathlon (2006–2020) and trail running (since 2021)
- I completed several races up to the Ironman 70.3 distance and 30 km trail run.

Visual astronomy

- Regular practice of visual astronomy as well as astronomical sketching.