Carl Stefan Engblom
ORCID: 0000-0002-3614-1732
Google Scholar: M368s5AAAAAJ
Researcher ID: T-8559-2018
URL: www.stefanengblom.org

CONTACT INFORMATION

Division of Scientific Computing,
Dept of Information Technology,
Uppsala University
The Ångström Laboratory,
room 106144
Box 337, SE-751 05, Uppsala
Sweden

Office: +46-18-471 27 54
Fax: +46-18-51 19 25
Cell: +46-70-620 62 20

E-mail: stefane@it.uu.se
Web: user.it.uu.se/∼stefane

POSITION

Professor in Scientific Computing at the Department of Information Technology, Uppsala University, Uppsala.

Appointed to Distinguished university teacher at the Faculty of Science and Technology, Uppsala University (December 15th, 2017).

Appointed to Docent in *Scientific Computing with a specialization in Numerical Analysis* at the Faculty of Science and Technology, Uppsala University (April 18th, 2013).

HONOURS

I was a member of the Young Academy of Sweden for the period (2016–21). The Young Academy of Sweden consists of about 35 members and the length of office is 5 years. The criteria for election are scientific excellence and a proven interest in the matters handled by the Academy. All scientific disciplines are welcome into the Academy.

SUPERVISION

- Current PhD-students:
  - Main supervisor of Vaishnavi Divya Shridar (Jan 2024–), *Towards model-based analysis in wastewater epidemiology: the specifics of antimicrobial resistance*
  - Main supervisor of Gesina Mentz (Jan 2022–), *Computational modeling of populations of cells*
  - Main supervisor of Erik Blom (Sep 2021–), *Scalable computational modeling of living cells*
  - Co-supervisor of Anna Frigge (2021–), Alfred Andersson (2020–), Helena Andersson (2020–)
- Previous PhD-students:
  - Main supervisor of Robin Marin (2017–22), PhD thesis *Computational Modeling, Parameterization, and Evaluation of the spread of*

Diseases (2022).
  - Main supervisor of Jing Liu (2012–20), PhD thesis *Towards Fast and Robust Algorithms in Flash X-ray single particle Imaging* (2020).
  - Main supervisor of Pavol Bauer (2012–17), PhD thesis *Parallelism in Event-Based Computations with Applications in Biology* (2017). Licentiate thesis: *Parallelism and Efficiency in Discrete-Event Simulation* (2015).
  - Co-supervisor of Stefan Widgren (2011–16), PhD thesis *Studies on verotoxigenic Escherichia coli O157 in Swedish cattle: from sampling to disease spread modelling* (2016).
  - Co-supervisor of Lina Meinecke (2011–16), PhD thesis *Stochastic simulation of multiscale reaction-diffusion models via first exit times* (2016).
  - Co-supervisor of Marcus Holm, Licentiate thesis *Scientific computing on hybrid architectures* (2013).

- Postdocs: Stefan Widgren (2017–18), Jonathan Bull (2016–2017), Doghonay Arjmand (2016–17), Emilie Blanc (2014–2015).

- MSc/BSc-theses:
  - MSc-thesis *Approximate Bayesian Computation for Data-Driven Epidemiological Models* by Christoph Nötzli (2023, Data Science)
  - MSc-thesis *Investigating the Estimation of the infection rate and the fraction of infections leading to death in epidemiological simulation* by Jakob Gölén (2023, Engineering Physics)
  - MSc-thesis *Cell-sorting in grid-based time-continuous cell population models* by Joel Olofsson (2022, Engineering Physics)
  - BSc-thesis *Computational modelling of quorum sensing using cascade delay* by Nils Axelsson and David Mårsäter (2022, Engineering Physics)
  - BSc-thesis *Tumörspridning med artificiell evolution: Warburgeffekten och cancercellers metabolism* by David Näsström and Marcus Medhage (2022, Engineering Physics)
  - MSc-thesis *Towards Hybrid Modeling of Avascular Tumours* by Erik Blom (2021, Computational Science)
  - MSc-thesis *Performance of Adaptive Fast Multipole Method in three dimensions for time-dependent problems* by Zain Nawas (2021, Computational Science)
  - BSc-thesis *Comparing priority queues with support for priority updates at arbitrary indexes* by Erik Granberg (2021, Computer Science)
  - BSc-thesis *Implementing multithreading for a fast multipole method using OpenMP* by Ludwig Ridderstolpe (2021, Computer Science)
  - MSc-thesis *Heterogeneous Multiscale Method in Markovian event-based models — With applications in tumor modeling* by An Khang Bui (2020, Numerische Mechanik, Technical University of Munich)
  - BSc-thesis *A parallel implementation of spatially distributed stochastic chemical kinetics* by Pontus Melin (2020, Computer Science)

- MSc-thesis (eq.) *Bayesian inference in Epidemics: consistency and convergence* by Samuel Bronstein (2019, Applied Mathematics, ENS Paris)
- MSc-thesis *Bayesian Parametrisation of In Silico Tumour Models* by Jonas Radvilas Umaras (2018, Computational Science)
- MSc-thesis *Computational modeling of avascular tumours using a hybrid on-lattice framework for cell-population dynamics* by Lina Viklund (2018, Engineering Physics)
- BSc-thesis *Mathematical modeling of interactions between colonic crypts* by Martin Edin and Nils Erlanson (2017, Engineering Physics)
- MSc-thesis *Multiscale Stochastic Neuron Modeling: with applications in deep brain stimulation* by Aleksandar Senek (2017, Engineering Physics)
- MSc-thesis *Bayesian Parameterization in the spread of Diseases* by Robin Eriksson (2017, Engineering Physics)
- MSc-thesis (eq.) *Pathwise error bounds in Multiscale variable splitting methods for spatial stochastic kinetics* by Augustin Chevallier (2016, Applied Mathematics, ENS Cachan)

TEACHING - As the teacher responsible at the Department of Information technology, Uppsala University:

- PhD-level course (module): *Foundations of probabilistic modeling* (2023). Developed by myself.
- PhD-level course: *Numerical Functional Analysis* (2014, 2019, 2022). This course was developed by myself.
- PhD-level course: *Numerical methods in stochastic modeling and simulations* (2016, 2020). This course was developed by myself.
- Advanced-level course: *Project course in Computational Science* (2023).
- Advanced-level course: *Advanced Numerical Methods* (2016, 2017), co-developed this course.
- Advanced-level course: *Applied Finite Element Methods* (2016), co-developed this course.
- Advanced-level course: *Scientific computing III* (2021, 2022).
- Basic-level course: *Scientific computing I* (2020), *Scientific computing II* (every year 2015–2019, 2023).

TALKS *Toward Bayesian models of growing tumors* at the ENUMATH conference, Lisbon, Portugal (2023).

Key speaker at the Hausdorff School on *Inverse Problems for Multi-scale Models*, University of Bonn, Germany, Aug 22–26 (2022).

Bayesian prediction of COVID-19 spread for informed decision making: Practical experiences from Uppsala at the MIT IDSS workshop Paths from Research to Impact: A Year of Collaborative Research on COVID-19 (2021).

Computational Bayesian modeling for disease control invited lecture given online in the Applied Mathematics Seminars-series at the University of Warwick (2020).

Computational modeling of populations of cells: applications to tumor behavior invited guest-lecture in the course Advanced Cancer Biology, Uppsala, Sweden (2020, 2021, 2022).

Scientific computing and the single cell... the cell population invited guest-lecture at SciLife Lab, Uppsala, Sweden (2019).

Stochastic modeling for the single cell and the cell population: considerations for data-driven methodologies invited talk given in the Systems Biology seminar series at University of Stuttgart (2019).

Bridging the single cell with the cell population: opening up for data-driven methodologies at the ENUMATH conference, Egmond aan Zee, The Netherlands (2019).

Bayesian epidemiologial modeling: with little and without data, at the conference *Multiscale Modelling of Materials and Molecules* in Uppsala, Sweden (2019).

From the bottom and up: bridging the single cell with the cell population, invited talk at the workshop *Multidisciplinary and multiscale approaches to bridge the gap between molecular and cellular level* at the Centro di Ricerca Mathematica (CRM) Ennio De Giorgio in Pisa, Italy (2018).

Bridging the scales between the single cell and the cell population - computational considerations, invited talk at the workshop *Uncertainty Quantification for Stochastic Systems and Application* at UCLA, CA, USA (2017).

A case study of Data-driven computational modeling in Epidemics: bringing the dirt to the classroom, in Lund, Sweden (2017).

Data-driven Epidemiological Simulations: Verotoxigenic E. coli O157 invited talk given at the workshop *Mathematical Biology for Understanding Emerging Infectious Diseases at the Human-Animal-Environment Interface: a "One Health" Approach*, in Banff, Alberta, Canada (2016). Related talks were given at the workshop *Scientific computing in Sweden* and at the *Bayesian Meeting*, both in Uppsala (2016).

Stability and strong convergence in multiscale methods for spatial stochastic kinetics at the workshop *Spatially Distributed Stochastic Dynamical Systems in Biology*, Cambridge, UK (2016).

Pathwise analysis for split-step methods and multiscale variable splitting in spatial stochastic kinetics at SciCADE 2015 in Potsdam, Germany (2015). A talk with the same title was given in the *Numerical Analysis* series at KTH, Stockholm, Sweden (2015).

AFFILIATION Member of *SIAM*.