

Xiang Ge (Xiangge) Luo

☎ +41 77 985 76 18 | ✉ luox@ethz.ch | 🌐 xgluo.github.io

Education

ETH Zurich

PHD CANDIDATE IN COMPUTATIONAL BIOLOGY

- Thesis: Modelling tumor mutation trees for evolution-guided precision oncology
- Supervisor: Prof. Dr. Niko Beerenwinkel | Second advisor: Dr. Jack Kuipers
- Doctoral committee: Prof. Dr. Jasmine Foo, Prof. Dr. Benjamin Raphael

Basel, Switzerland

2020.11 - expected 2025.12

ETH Zurich

MASTER OF SCIENCE IN STATISTICS

- GPA: 5.88/6 – Graduated with distinction
- Thesis: Learning Bayesian networks from ordinal data
- Supervisor: Dr. Jack Kuipers

Zurich, Switzerland

2018.09 - 2020.09

University of Waterloo

BACHELOR OF MATHEMATICS

- GPA: 92% – Graduated with distinction, Dean's Honours List

Waterloo, Canada

2013.09 - 2018.04

Research Experience

Computational Biology Group, ETH Zurich

SCIENTIFIC ASSISTANT

- Supervisor: Prof. Dr. Niko Beerenwinkel
- Developed mathematical and statistical models to infer cancer evolution from cross-sectional single-cell phylogenies, aiming to predict drug resistance and facilitate evolution-guided precision oncology.

Basel, Switzerland

2020.11 - present

Institute of Molecular Systems Biology, ETH Zurich

SEMESTER STUDENT

- Supervisor: Prof. Dr. Mattia Zampieri
- Analyzed E. coli drug response metabolomics data to investigate regulatory and functional relationships between metabolites.

Zurich, Switzerland

2019.03 - 2019.07

Seminar for Statistics, ETH Zurich

STATISTICS LAB STUDENT

- Supervisor: Dr. Markus Kalisch
- Analyzed mouse experimental data using mixed models to assess bone loss and identify early osteoporosis markers.

Zurich, Switzerland

2019.03 - 2019.06

Department of Statistics and Actuarial Science, University of Waterloo

UNDERGRADUATE RESEARCHER

- Supervisor: Prof. Dr. Alexander Schied
- Derived the Nash equilibrium for risk-averse investors in a market impact game with transient price impact and quadratic transaction costs over finite and infinite horizons.

Waterloo, Canada

2017.09 - 2017.12

Awards & Scholarships

2024	SIB Remarkable Outputs 2023 Award , Swiss Institute of Bioinformatics	Switzerland
2017	Undergraduate Student Research Award , NSERC (\$4,500)	Canada
2017	President's Research Award , University of Waterloo (\$1,500)	Canada
2015	President's International Experience Award , University of Waterloo (\$1,500)	Canada
2013	Isabel Farrar Undergraduate Entrance Scholarship , University of Waterloo (\$4,000)	Canada
2013	President's Scholarship of Distinction , University of Waterloo (\$2,000)	Canada

Publications

Xiang Ge Luo, Jack Kuipers, Kevin Rupp, Koichi Takahashi and Niko Beerenwinkel. Bayesian inference of fitness landscapes via tree-structured branching processes. *Bioinformatics*, in press, 2025. (**ISMB/ECCB 2025**, acceptance rate 17.5%)

Xiang Ge Luo, Jack Kuipers and Niko Beerenwinkel. Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees. *Nature Communications*, 14:3676, 2023. (**RECOMB 2022**, acceptance rate 21.3%)

Xiang Ge Luo, Giusi Moffa and Jack Kuipers. Learning Bayesian networks from ordinal data. *Journal of Machine Learning Research*, 22:1-44, 2021.

Xiangge Luo and Alexander Schied. Nash equilibrium for risk-averse investors in a market impact game with transient price impact. *Market Microstructure and Liquidity*, 5:2050001, 2020.

Conferences, Seminars & Workshops

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| 2025.07 | Contributed talk , ISMB/ECCB 2025 Conference | Liverpool, UK |
| | • Bayesian inference of fitness landscapes via tree-structured branching processes | |
| 2025.04 | Poster , 6th Zurich Precision Oncology Symposium | Zurich, Switzerland |
| | • FiTree: fitness inference from single-cell phylogenies applied to acute myeloid leukemia data | |
| 2025.03 | Invited talk , D-BSSE Departmental Seminar Series, ETH Zurich | Basel, Switzerland |
| | • Fitness inference from single-cell phylogenies using tree-structured branching processes | |
| 2025.02 | Contributed talk , PhyloBasel Seminar Series, ETH Zurich | Basel, Switzerland |
| | • Bayesian inference of fitness landscapes via tree-structured branching processes | |
| 2024.06 | Award talk , SIB Days – The Swiss Bioinformatics Summit | Virtual |
| | • Mining tumor mutation trees with TreeMHN for evolution-guided precision oncology | |
| 2023.06 | Contributed talk , SKINTEGRITY.CH Annual Retreat | Spiez, Switzerland |
| | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees | |
| 2022.06 | Contributed talk , Mutual Hazard Networks Workshop | Virtual |
| | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees | |
| 2022.05 | Contributed talk , RECOMB 2022 Conference | San Diego, USA |
| | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees | |
| 2022.04 | Contributed talk , OLISSIPO Exchange Week | Lisbon, Portugal |
| | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees | |
| 2022.03 | Poster , Ascona Workshop 2022 | Ascona, Switzerland |
| | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees | |

Teaching

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|-------------|---|------------|
| Spring 2023 | Teaching Assistant , Statistical Models in Computational Biology | ETH Zurich |
| Spring 2022 | Head Teaching Assistant , Statistical Models in Computational Biology | ETH Zurich |
| Spring 2022 | Teaching Assistant , LSZGS Advanced Block Course Computational Biology | ETH Zurich |
| Spring 2021 | Teaching Assistant , Statistical Models in Computational Biology | ETH Zurich |

Supervision

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| 2023 | Laura Quintas , Master Student, INESC-ID (Co-supervised with Monica Baciu-Dragan) |
| 2023 | Laurenz Keller , Master Student, ETH Zurich (Co-supervised with Pawel Piotr Czyz) |
| 2022 | Jiayi Wang , Master Student, ETH Zurich (Co-supervised with Pawel Piotr Czyz) |

Academic Services

Journal Reviewer for Genome Research, Bioinformatics

Conference Reviewer for RECOMB, ISMB

Languages and Skills

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| Coding | Python, R, C++, MATLAB, Git, Snakemake, \LaTeX |
| Languages | English (working proficiency), Mandarin (native), Cantonese (native) |