

# Xiang Ge (Xiangge) Luo

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## Education

### ETH Zurich

#### PHD CANDIDATE IN COMPUTATIONAL BIOLOGY

- Thesis: Modelling tumor mutation trees for evolution-guided precision oncology
- Advisor: 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
- Advisor: 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

- Advisor: 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

- Advisor: 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

- Advisor: 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

- Advisor: 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	<b>SIB Remarkable Outputs 2023 Award</b> , Swiss Institute of Bioinformatics	Switzerland
2017	<b>Undergraduate Student Research Award</b> , NSERC (\$4,500)	Canada
2017	<b>President's Research Award</b> , University of Waterloo (\$1,500)	Canada
2015	<b>President's International Experience Award</b> , University of Waterloo (\$1,500)	Canada
2013	<b>Isabel Farrar Undergraduate Entrance Scholarship</b> , University of Waterloo (\$4,000)	Canada
2013	<b>President's Scholarship of Distinction</b> , 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 | <b>Contributed talk</b> , ISMB/ECCB 2025 Conference   | Liverpool, UK       |
|         | • Bayesian inference of fitness landscapes via tree-structured branching processes              |                     |
| 2025.04 | <b>Poster</b> , 6th Zurich Precision Oncology Symposium   | Zurich, Switzerland |
|         | • FiTree: fitness inference from single-cell phylogenies applied to acute myeloid leukemia data |                     |
| 2025.03 | <b>Invited talk</b> , D-BSSE Departmental Seminar Series, ETH Zurich                            | Basel, Switzerland  |
|         | • Fitness inference from single-cell phylogenies using tree-structured branching processes      |                     |
| 2025.02 | <b>Contributed talk</b> , PhyloBasel Seminar Series, ETH Zurich                                 | Basel, Switzerland  |
|         | • Bayesian inference of fitness landscapes via tree-structured branching processes              |                     |
| 2024.06 | <b>Award talk</b> , SIB Days – The Swiss Bioinformatics Summit                                  | Virtual             |
|         | • Mining tumor mutation trees with TreeMHN for evolution-guided precision oncology              |                     |
| 2023.06 | <b>Contributed talk</b> , SKINTEGRITY.CH Annual Retreat   | Spiez, Switzerland  |
|         | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees  |                     |
| 2022.06 | <b>Contributed talk</b> , Mutual Hazard Networks Workshop                                       | Virtual             |
|         | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees  |                     |
| 2022.05 | <b>Contributed talk</b> , RECOMB 2022 Conference  | San Diego, USA      |
|         | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees  |                     |
| 2022.04 | <b>Contributed talk</b> , OLISSIPO Exchange Week  | Lisbon, Portugal    |
|         | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees  |                     |
| 2022.03 | <b>Poster</b> , Ascona Workshop 2022  | Ascona, Switzerland |
|         | • Joint inference of exclusivity patterns and recurrent trajectories from tumor mutation trees  |                     |

## Teaching

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

## Supervision

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| 2023 | <b>Laura Quintas</b> , Master Student, INESC-ID (Co-supervised with Monica Baciu-Dragan) |
| 2023 | <b>Laurenz Keller</b> , Master Student, ETH Zurich (Co-supervised with Pawel Piotr Czyz) |
| 2022 | <b>Jiayi Wang</b> , 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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|------------------|--|
| <b>Coding</b>    | Python, R, C++, MATLAB, Git, Snakemake, $\text{\LaTeX}$              |
| <b>Languages</b> | English (working proficiency), Mandarin (native), Cantonese (native) |