

Education

- 2017– **Georgia Institute of Technology**, *Atlanta, Georgia, USA*.
PhD. student, School of Mathematics. Advisor: Anton Leykin. Expected date for PhD completion date: May 2022
- 2016–2017 **The University of Tokyo**, *Tokyo, Japan*.
Exchange studies, Master's thesis. Supervisor: Associate Professor Tomonari Sei, Department of Mathematical Informatics, Graduate School of Information Science and Technology.
- 2015–2017 **Aalto University School of Science**, *Espoo, Finland, MSc.*
Master's Programme in Mathematics and Operations Research. GPA 5/5
- 2014–2015 **The University of Hong Kong**, *Hong Kong, China*.
Exchange studies: mathematics, computer science, Cantonese
- summer 2014 **Stanford University**, *Stanford, California, USA*.
Stanford Summer International Honors Program: computer science & scientific computing.
- 2012–2015 **Aalto University School of Science**, *Espoo, Finland, BSc. (pass with Distinctions)*.
Engineering Physics and Mathematics, Mathematics major. GPA 4.96/5

Work Experience

- 2017– **Georgia Institute of Technology**, *Atlanta, Georgia, USA*.
Graduate student instructor and graduate teaching assistant.
- 2016 **Aalto University, School of Science**, *Espoo, Finland*.
Teaching assistant, Introduction to abstract algebra & Introduction to discrete mathematics
- summer 2015 **CERN (Helsinki Institute of Physics)**, *Geneva, Switzerland*.
Summer trainee, Diffractive Physics in the ALICE collaboration.
- summer 2014 **Aalto University, School of Science**, *Espoo, Finland*.
Research assistant, Algebra, Number Theory and Applications Research Group
- summer 2013 **Aalto University, School of Chemical Technology**, *Espoo, Finland*.
Research assistant, Novel Materials via Self-Assembly Research Group

Publications

Published

- 2020 M.Härkönen, Y.Hirose, T.Sei: Holonomic extended least angle regression, *Information Geometry*, <https://doi.org/10.1007/s41884-020-00035-1>
- 2020 M.Härkönen, B.Hollering, F.Tarashi Kashani, J.I.Rodriguez: Algebraic Optimization Degree, *ACM Communications in Computer Algebra*, <https://doi.org/10.1145/3427218.3427222>
- 2015 H.Antila, M.Härkönen, M.Sammalkorpi: Chemistry specificity of DNA-polycation complex salt response: A simulation study of DNA, polylysine and polyethyleneimine, *Physical Chemistry Chemical Physics*, <https://doi.org/10.1039/C4CP04967E>

Preprints

- 2021 J.Chen, Y.Cid-Ruiz, M.Härkönen, R.Krone, A.Leykin: Noetherian Operators in Macaulay2. arXiv preprint arXiv:2101.01002. Submitted for publication
- 2020 J.Chen, M.Härkönen, R.Krone, A.Leykin: Noetherian operators and primary decomposition. arXiv preprint arXiv:2006.13881. Submitted for publication

Software and other activities

- Open source I contribute to Macaulay2 and attend internal meetings
- Peer-review I have reviewed manuscripts for the following journals: Journal of the Royal Statistical Society Series B (Statistical Methodology), Algebraic Statistics.
- Other I was a member of the Aalto University Algorithmic Problem Solving team, and attended the 2015 Northwestern Europe Regional Contest (NWERC) in Linköping, Sweden.

Computer skills

Advanced Linux, Macaulay2
Intermediate \LaTeX , C++ , R, Python
Basic Mathematica, C, Rust

Languages

Fluent **Finnish, French, English**
Others **Japanese (intermediate), Swedish (basic), Cantonese (basic), Mandarin (basic)**

Awards

2019 Chateaubriand fellowship
2019 SIAM Student Travel Award
2019 Vilho, Yrjö and Kalle Väisälä Foundation scholarship
2018 Bob Price Travel award

Conferences, Summer Schools, Workshops

2020/06 **ISSAC 2020 (virtual)**, Kalamata, Greece.
Software presentation

2020/05 **Macaulay2 Workshop (virtual)**, *Cleveland State University*, Cleveland, OH.

2019/12 **PGMO Days, EDF'Lab Paris-Sarclay**, Paris, France.
Invited talk

2019/07 **SIAM Conference on Applied Algebraic Geometry**, *University of Bern*, Bern, Switzerland.
Invited talk in Algebraic Statistics mini-symposium

2019/04 **Meeting on Applied Algebraic Geometry**, *Georgia Institute of Technology*, Atlanta, USA.

2018/09 **Nonlinear Algebra in Applications**, *ICERM (Brown University)*, Providence, USA.
Part of the semester program in Nonlinear Algebra

2018/09 **Real Algebraic Geometry and Optimization**, *ICERM (Brown University)*, Providence, USA.
Part of the semester program in Nonlinear Algebra

2018/09 **Core computational methods**, *ICERM (Brown University)*, Providence, USA.
Part of the semester program in Nonlinear Algebra

2018/09 **Nonlinear Algebra Bootcamp**, *ICERM (Brown University)*, Providence, USA.
Part of the semester program in Nonlinear Algebra

2018/08 **Hyperplane arrangements and computations with CoCoA**, *Hokkaido University*, Sapporo, Japan.

2018/04 **Meeting on Applied Algebraic Geometry**, *Georgia Tech*, Atlanta, USA.

2018/02 **TAGS - Linking Topology to Algebraic Geometry and Statistics**, *Max Planck Institute for Mathematics in the Sciences*, Leipzig, Germany.
Poster presented: Holonomic extended least angle regression

2017/01 **Workshop on Non-Linear Algebra**, *Max Planck Institute for Mathematics in the Sciences*, Leipzig, Germany.

2016/08 **26th Jyväskylä Summer School**, Jyväskylä, Finland.
Attended course MA4: Lévy and Feller Processes and Applications

2016/06 **Summer School on Algebra, Statistics and Combinatorics**, Helsinki, Finland.

2015/08 **WE-Heraeus Physics School**, *Diffraction and Electromagnetic processes at high energies*, Bad Honnef, Germany.
Poster presented: Soft classification for particle identification in central exclusive production

Master's Thesis

Title *Holonomic extended least angle regression*
Supervisor Professor Camilla Hollanti (Aalto University)
Advisor Professor Tomonari Sei (University of Tokyo) and Professor Kaie Kubjas (Aalto University)

Bachelor's Thesis

Title *Distributed storage systems and product-matrix codes*
Supervisor Professor Camilla Hollanti (Aalto University)