Luca Ferranti

Curriculum Vitae

August 3, 2021

My mission in life is not merely to survive, but to thrive; and to do so with some passion, some compassion, some humor, and some style. - Maya Angelou

PERSONAL DETAILS

Name	Luca Ferranti
Birthdate	May 3, 1996
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	github.com/lucaferranti
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	https://orcid.org/0000-0001-5588-0920

EDUCATION

Phd Computer Science 2020-Present

University of Vaasa, Vaasa, Finland

Doctoral research on computational methods for robust and efficient positioning techniques.

M.Sc Electrical Engineering 2018-2019

Tampere University of Technology, Tampere, Finland

Graduated on 18.12.2019 with distinction, GPA: 4.89/5.0
Major Subject: Signal Processing and Machine Learning (GPA: 5.0/5.0)
Minor Subject: Wireless Communications (GPA: 5.0/5.0)
Thesis Topic: *Confidence Estimation in Image-Based Localization*, grade: 5/5

B.Sc Electrical Engineering 2015-2018

Tampere University of Technology, Tampere, Finland

Graduated on 25.05.2018 with distinction, GPA: 4.82/5
Major Subject: Electronics (GPA: 4.84/5.0)
Minor Subject: Physics (GPA 5.0/5.0)
Thesis Topic: *Continued fractions in modelling of passive circuit components and transmission lines* (written in Finnish), grade: 4/5

WORKING EXPERIENCE

Project Researcher January 2020-Present
University of Vaasa, Vaasa, Finland

Research on computational methods for positioning and visual localization. Particularly, focus on computational algebraic geometry techniques to develop optimized polynomial solvers.

Teaching a graduate level course in computer vision.

Visiting Researcher January 2020-Present
Aalto University, Espoo, Finland

For my doctoral research, I am also affiliated with Aalto University.

Google Summer of Code June 2020 - August 2021
Julia Programming Language

I developed IntervalLinearAlgebra.jl, a package containing state-of-the-art algorithms to perform numerical linear algebra rigorously using interval arithmetic.

Julia Season of Docs October 2020 - March 2021
Julia Programming Language

I developed a webpage (juliaintervals.github.io) containing documentation and learning materials for Julia packages related to interval arithmetic.

Visiting Researcher March 2020-April 2020
Lund University, Lund, Sweden

Visiting researcher in the department of mathematics in Lund University. I worked on numerical methods for sensor networks self-calibration.

Master Thesis Worker June 2019-December 2019
Aalto University, Espoo, Finland

In my thesis I investigated state-of-the-art pose estimation algorithms, with focus on indoor localization, and proposed novel approaches to improve algorithms robustness.

Research assistant November 2018- December 2019
Tampere University of Technology

Visiting master thesis worker at Aalto university from June 2019.
GPU programming for image denoising with openCL till May 2019.

Research assistant May 2017- December 2018
Tampere University of Technology, Tampere, Finland

Teaching: TA in basic courses in electrical engineering (Circuit Analysis and Linear Systems). I also developed automatically graded exercises on the moodle platform and Matlab demos to enhance students learning. My teaching methods received high praise from students feedback.

Research: Numerical methods for heat transfer problems in superconducting cables.

Employee October 2015- April 2017
McDonald's, Tampere, Finland

By my colleagues' initiative, I was chosen employee of the month in April 2016 and "day saver 2016" in summer 2016.

Italian Teacher August 2015 - September 2015
Tampere Classical High School, Tampere, Finland

I taught a short introductory Italian course in Tampere Classical High School. I designed the lessons and prepared the materials myself.

Italian Teacher September 2014 - April 2015

Onlus Terzavia, Ancona, Italy

As volunteer, I taught Italian to immigrants targetting levels from A1 to B2. In addition to contact teaching, I designed the lessons and prepared materials myself

LANGUAGE SKILLS

Italian:	Native proficiency
Finnish:	Full professional proficiency (C2)
English:	Full professional proficiency (C1)
French:	Limited working proficiency (B1)
German:	Elementary proficiency (A2)

IT SKILLS

Languages:	Julia, Matlab, Python, C, C++ (fluent). Javascript, HTML, CSS, SQL (good)
Computer Algebra:	Maple, Sage, Macaulay2, Mathematica
Tools:	Git, Docker
Operating Systems:	Linux, Windows, MacOS
Reporting:	LaTeX, Microsoft Office, Open Office

RESEARCH OUTPUTS

Conference papers:

- L.Ferranti, K.Åström, M.Oskarsson, J.Boutellier, J.Kannala, *Homotopy Continuation for Sensor Networks Self-Calibration*, **accepted** to EUSIPCO 2021, prerint: arXiv:2108.00667
- L.Ferranti, K.Åström, M.Oskarsson, J.Boutellier, J.Kannala, *Sensor Network TDOA Self-Calibration: 2D Complexity Analysis and Solutions*, 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)
- L.Ferranti, X.Li, J.Boutellier, J.Kannala, *Can You Trust Your Pose? Confidence Estimation in Visual Localization*, International Conference of Pattern Recognition (ICPR) 2020
- L.Ferranti, J.Boutellier, *Towards Algebraic Modeling of GPU Memory Access for Bank Conflict Mitigation*, 2019 IEEE International Workshop on Signal Processing Systems (SiPS)

Talks:

- *IntervalLinearAlgebra.jl: linear algebra done rigorously*, JuliaCon 2021, 30 July 2021, available at `https://youtu.be/fre0TKgLJwg`
- *Confidence estimation in image-based localization*, AI day, 26 November 2020
- *Confidence estimation in image-based localization*, 2019 Indoor and Challenging Navigation (INTO) Seminar, 29 November 2019

OTHER ACADEMIC MERITS

I have peer-reviewed articles for the following conferences:

- International Conference on Acoustics, Speech and Signal Processing (ICASSP)
- International Workshop on Signal Processing Systems (SiPS)