



## Profile

A mathematically oriented wireless/NTN engineer with PhD-level expertise and 6+ years of proven track record of R&D experience in building simulation tools and algorithms to analyze interference, SIR/SINR, channel modeling, coverage, and routing for NTN systems. Able to make sense of raw data and communicate it to the audience and stakeholders. Participated in projects tied to VTT and the European Space Agency. With ambition, I will apply my NTN performance analysis and simulation expertise to solve real-world problems in the fast-paced industry/startups. Ethical and environmental aspects are also near my heart. FIN/EU citizen.

## Core Skills

Languages/Tools	PYTHON, C++, JAVA, C, OCTAVE, MATLAB, MATHEMATICA, GIT, LATEX, Linux operating system. Spoken languages: Native <b>Finnish</b> , fluent in <b>English</b> , good in <b>Swedish</b> , beginner in <b>Spanish</b> .
Domains	LEO/NTN comms, stochastic geometry, spatial and temporal channel models, statistical interference models, SINR, SIR, and other performance metrics, routing, ML for signal processing, LEO constellations.
Practices	Simulation design, algorithm prototyping, data analysis, stakeholder coordination, technical writing.

## Experience and impact (hyperlinks in red)

5/2025- Project Researcher, Aalto University, Department of Electrical Engineering, Espoo, Finland

9/2025 - Managed an R&D article project [1]: drove on-campus collaboration to deliver a spatio-temporal interference and ALOHA MAC analysis for LEO/NTN networks. - Built/maintained simulation code in MATLAB and OCTAVE.

**Impact:** - Formulated closed-form interference correlation functions enabling more efficient ML-based signal processing, including NTN channel responses and GPR signal estimation for 3GPP NTN and satellite imaging applications.

8/2023- Visiting Researcher, University of Notre Dame, Department of Electrical Engineering

2/2024 - Designed and implemented analytical and simulation framework (MATLAB, MATHEMATICA) for 3GPP LEO uplink SIR meta distribution, enabling systematic exploration of constellation densities and terrestrial interference effects on link performance [2]. - Coordinated a distributed team (co-authors across institutions), handled the full delivery pipeline (simulation, analysis, documentation, peer review) to publication in IEEE Transactions on Communications.

**Impact:** - Identified an optimal LEO constellation density that maximizes average throughput and quantified a trade-off between throughput and performance consistency, quantitatively and qualitatively guiding dense LEO network design. - Proposed a novel statistical NTN SIR model as the well-known Lomax distribution, enlightening the NTN communication peculiarities, and providing tractable tools for performance analysis.

05/2019- PhD Researcher, Aalto University, Signal Processing of Wireless Networks, Espoo, Finland

05/2025 - Conceived and executed an R&D project plan on impactful NTN research. - Built and maintained a multi-language simulation stack (PYTHON, MATLAB, OCTACE, MATHEMATICA) including algorithms for analysis, simulation, and visualization, used across several research projects. - Secured competitive research grants. - Presented results to audiences in flagship conferences [3]. - Supervised junior researchers. - Put forth a novel stochastic geometry NTN model, allowing for more efficient allocation of simulation resources. - Building an international professional network.

**Impact:** - Laid novel stochastic geometry framework for analysis of NTN networks, reducing the simulation time in the order of magnitude hours to minutes compared to MATLAB Satellite Communication Toolbox [4]. - Analyzed and simulated successive interference cancellation (SIC) algorithms that improved coverage performance by 900% [5].

## Education

2025 Doctor of Science (PhD) (thesis in pre-examination), Aalto University, Signal Processing for 5G/6G/LTE/3GPP/NTN/LEO communications, stochastic geometry analysis and simulation.

2018 MSc, Univ. of Helsinki, Applied Analysis. PDEs, finite element method (FEM), antenna theory.

2016 BSc, Univ. of Helsinki, Applied Analysis. Optimal control theory, system performance optimization.

## References

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