

Dr. Helga Ingimundardóttir

Ph.D. in Computational Engineering

Assistant Professor · Industrial Engineering, Mechanical Engineering and Computer Science · University of Iceland

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ACADEMIC APPOINTMENTS

2024–

Fellow of the Teaching Academy

Icelandic Teaching Academy, University of Iceland · Reykjavík, Iceland

Recognised for excellence and innovation in university teaching.

The fellowship reflects a sustained commitment to active learning pedagogies, including flipped classroom design, project-based assessment, and industry-engaged curricula that connect students with real-world engineering challenges.

2023–

Assistant Professor

Faculty of Industrial Engineering, Mechanical Engineering and Computer Science, University of Iceland · Reykjavík, Iceland

Teaching business intelligence, discrete-event simulation, operations research and information engineering — with real data from Icelandic companies.

My focus is on bridging theoretical knowledge with practical skills, emphasising the use of real-world data in collaboration with Icelandic companies. Specialising in courses such as Business Intelligence, (Discrete)

Simulation, Operations Research and Information Engineering, I equip students with the tools and insights needed to excel in the industrial sector.

2023

Postdoctoral Researcher

Industrial Engineering Department, University of Iceland · Reykjavík, Iceland

Member of the IDeLM (Intelligent Decision Learning Models) research team, funded by the Icelandic Research Fund.

The IDeLM project develops intelligent decision-making models by applying machine learning and data analytics, with the goal of enhancing decision processes across domains. My responsibilities included conducting research, analysing data, developing machine learning models, and collaborating with the team.

EDUCATION

2009–2016

Ph.D. in Computational Engineering

University of Iceland · Reykjavík, Iceland

Hyperheuristics for job-shop scheduling, supervised by Prof. Tómas Philip Rúnarsson.

Automating the scheduling process for Job Shop Scheduling Problems using ordinal regression, and analysing the *problem difficulty* and the **algorithm footprints in instance space** for such optimisation problems. Awarded a doctoral grant from the University of Iceland Research Fund. **Thesis:** *ALICE: Analysis & Learning Iterative Consecutive Executions* — <http://hdl.handle.net/1946/25337>

2010–2012

Postgraduate Diploma in Teaching Studies in Higher Education

School of Education, University of Iceland · Reykjavík, Iceland

A 30 ECTS programme in university teaching — one of the inaugural participants in 2010.

A programme spearheaded by Professor Guðrún Geirsdóttir, tailored to faculty and doctoral students teaching at the University of Iceland. Coursework across three semesters covered university-level teaching studies, course design and assessment, and reflective practice. The final class produced a grant application that was funded by the University of Iceland Teaching Fund.

2008–2010

M.Sc. in Computational Engineering

University of Iceland · Reykjavík, Iceland

Wavelet transforms for fouling detection in heat exchangers, in collaboration with the [Université de Valenciennes](#).

Research with Prof. Sylvain Lalot at the [Université de Valenciennes et du Hainaut-Cambrésis](#), France (now the Polytechnic University of Hauts-de-France), exploring the feasibility of using wavelet transforms to detect fouling in cross-flow heat exchangers from measurements taken during normal operation. Awarded a grant from the French Embassy in Iceland to study in France. **Thesis:** *Detection of Fouling: Effectiveness Ratio Method* — <http://hdl.handle.net/1946/4445>

2005–2008

B.Sc. in Mathematics

University of Iceland · Reykjavík, Iceland

Specialisation in Computer Science.

INDUSTRY EXPERIENCE

2022–2023

Head of AI Research

Travelshift · Reykjavík, Iceland

Led the AI research team optimising vacation packages for GuideToEurope.com — the travelling thief problem.

The team developed data-driven optimisation for vacation packages offered on [GuideToEurope.com](https://www.guidetoEurope.com). The core problem was the NP-hard travelling thief problem, which combines the knapsack problem with the travelling salesman problem. I also contributed to related patent applications.

2021–2022

Data Scientist

CCP Games · Reykjavík, Iceland

Led development of a real-time recommendation engine for new EVE Online characters.

Built real-time time-series features from proto-events on Kafka streams using the TimescaleDB extension for PostgreSQL, and developed ad-hoc metrics to measure content quality and engagement for the new recommendation models.

2016–2021

Research Scientist

deCODE genetics · Reykjavík, Iceland

Founding member of the Oxford Nanopore team; ran the long-read pipeline that processed 6 petabytes in three years.

Responsible for implementing and maintaining the long-range sequencing analysis pipeline. Collaborated with the lab on protocols and with IT on cluster and disk architecture to process a large volume of data (6 PB over three years) while ensuring data integrity. Also co-authored research papers with the ONT team and operationalised research findings for production use.

2015–2016

SQL Consultant

AGR Dynamics · Reykjavík, Iceland

Implemented AGR 5, a web-based supply chain management system, into client ERP systems.

AGR 5 lets users visualise sales history and generate order proposals using statistical forecasting. The work involved implementation, database maintenance and custom SQL solutions tailored to individual customers.

2013–2015

Computational Engineer, Research and Development

Valka (now part of JBT Marel) · Kópavogur, Iceland

Designed an intelligent fish portioning algorithm from X-ray imagery and generalised bone detection across species.

Valka is a leading provider of equipment and automation for fish processing. Alongside the portioning and bone-detection algorithms, I contributed to three-dimensional visualisation of fish bones and carried out efficiency testing and reporting.

TEACHING

2024–

IDN302G — Information Engineering

University of Iceland

Undergraduate course on databases, SQL, regex and data storytelling — taught through team projects and peer assessment.

2025–

IDN403M — Discrete-Event Simulation

University of Iceland

Discrete-event simulation of queueing systems and production processes, modelled from real operational data.

2023–

IDN610M — Business Intelligence

University of Iceland

Supervised learning, clustering and process mining on real-world data for 3rd-year BSc and 1st-year MSc students.

A project-driven approach with an emphasis on active participation. Students develop practical skills such as effective use of GitHub and technical report writing, and leave with a solid understanding of key machine learning techniques and their use cases.

2011, 2012, 2024

IDN401G — Operations Research

University of Iceland

Sole instructor in 2011 and 2012, co-teacher in 2024; restructured the assignments, grading and tests together with the School of Education.

Working with Guðrún Geirsdóttir at the School of Education, the course was restructured from the ground up. The innovations in course design, assessment and tutorial evaluation inspired a fellow teacher in Natural Sciences, and together we secured a University teaching grant to develop the methods further.

2007–2010

Teaching Assistant

School of Engineering and Natural Sciences, University of Iceland

Tutorials and marking for Linear Algebra, Simulation, Operations Research, Calculus IB and Numerical Analysis.

GRANTS

Project grants

2024–2026

HiDef Textiles: Optimising Textile Processes with AI

University of Iceland Research Fund

Project grant merging AI, industrial engineering, computer science and textile craftsmanship.

The goal is to democratise technology and programming through textiles, integrating arts and sciences. We are developing a sustainable learning platform to share industrial best practice, with an emphasis on women in STEM.

2024

Student Innovation Fund grant

Icelandic Centre for Research, Student Innovation Fund

Funding to upgrade a 1990s knitting machine to modern autonomous standards — three BSc graduates for three months each.

Part of HiDef Textiles. The project combines sustainable technology, textile innovation, STEAM education, AI and IoT. By the end of the summer a functional knitting machine was ready to present at local conferences.

2012

Grant for Teaching Development

University of Iceland, Academic Affairs Fund

The project *Breytt dæmatímafyrirkomulag hjá VON* — a new tutorial format at SENS.

A grant to improve undergraduate homework assignments in Engineering and Natural Sciences: a simpler method that reduces teacher workload while giving students better feedback. The work was done as part of the course *Reflective practice and professional development*.

2009–2012

Postgraduate Scholarship

University of Iceland Research Fund

Three-year stipend for doctoral studies.

Mobility grants
2024

Erasmus+ Higher Education Mobility Grant

ERASMUS+

Study visit to Aalborg University and DTU on project-based learning and curriculum integration.

The mobility enhances the University of Iceland teaching methodology by learning from Aalborg University project-based learning and DTU curriculum integration. The collaboration improves the curriculum, smooths BSc to MSc transitions, and strengthens international partnerships.

2010

Higher Education Mobility Grant

Fundusz Stypendialny i Szkoleniowy (FSS)

Mobility grant to visit Politechnika Śląska in Gliwice, Poland.

2009

Postgraduate Scholarship

French Embassy, Reykjavík

Awarded to Icelandic students pursuing a Masters degree in France.

AWARDS AND NOMINATIONS

2015

Nominated for Best Paper award

9th International Conference on Learning and Intelligent Optimization (LION9)

One of three full-paper submissions nominated for the Best Paper award.

2005

Magna cum laude

The Commercial College of Iceland

Ranked third in my graduating class, with an award for academic achievement in mathematics.

TALKS AND OUTREACH

2025

Invited talk: HiDef Textiles: Reviving Tradition with Innovation

Reykjavik DataBeers, 25 January 2025

Empowering creativity and sustainability in textile production through digital transformation — Icelandic knitting tradition meets modern tooling.

The talk showed how the HiDef Textiles project modernises textile production by combining traditional Icelandic knitting techniques with digital design tooling. Data and slides are on [GitHub](#).

2024

Newspaper interview: An autonomous knitting machine in the making

Morgunblaðið, Reykjavík

Coverage of three students making a 1990s knitting machine run autonomously — part of HiDef Textiles.

2024

Invited talk: Software development and people

The Icelandic Computer Society (SKY)

On transparency and communication between teams in software development, drawn from experience across industries.

2023

Invited talk: Pushing Boundaries: A Data-Driven Dive into The Legend of the Ice People

Advania Autumn Conference, Harpa, Reykjavík

Where literature meets data science: insights from the Icelandic book releases and Storytel audiobooks.

2023

Invited talk: The Legend of the Cat People

6th Reykjavik Data Beers, Orkuveita Reykjavíkur

An engineering perspective on Margit Sandemo 1980s sensation (with cat memes). All data and code on [GitHub](#).

2022

Panellist: The impact of language technology and AI on Icelandic

3rd European Language Resource Coordination (ELRC) workshop in Iceland

A discussion with developers, integrators and users on the status and future of language technology in Iceland.

2017–2020

Podcast host: ÍSKISUR

Alvarpið & Storytel

Read all 47 books of Margit Sandemo Legend of the Ice People with two friends — and curated the internet-cat segment.

- 2016–2017** **Recurring podcast guest: Tæknivarpíð**
Hlaðvarp Kjarnans
Discussing the latest technology, from iPhones and Star Wars to gender representation in IT.
- 2016** **Founding workshop: Association of Women in Science (SKVÍS)**
SKVÍS
Took part in the founding workshop, developing strategies to increase the visibility of women experts in the media.
- 2016** **Doctoral defence: ALICE: Analysis & Learning Iterative Consecutive Executions**
University of Iceland, 30 June 2016
Opponents: Prof. Edmund Burke and Prof. Kate Smith-Miles.
- 2010** **Invited speaker: Politechnika Śląska, Gliwice**
Erasmus+ Teaching Staff Mobility Programme
Invited by Prof. Waldemar Grzechca; presented my doctoral research to the Faculty of Automation, Electronics and Computer Science.
- 2009** **Invited speaker: Université de Valenciennes et du Hainaut-Cambrésis**
ENSIAE (now the Polytechnic University of Hauts-de-France)
Presented my Masters research to the faculty, as part of the collaboration with Sylvain Lalot.

SERVICE AND COMMITTEES

- 2015, 2023–** **Advisory board member, Technology Development Fund**
Icelandic Centre for Research (Rannís)
Advisory board assessing grant applications for technological development and innovation in Iceland.
- 2018–2021** **Board member of the company union**
deCODE genetics
- 2016** **Treasurer of the company union**
AGR Dynamics
- 2014–2015** **Treasurer of the company union**
Valka
- 2011–2012** **Science Committee member**
School of Engineering and Natural Sciences, University of Iceland
Graduate student representative on the committee that promoted research activity and cross-disciplinary discussion.
- 2011** **Founding member of Arkimedes**
School of Engineering and Natural Sciences, University of Iceland
The society for PhD students and postdoctoral researchers at the School of Engineering and Natural Sciences.
- 2009–2011** **Co-founder and Treasurer of Heron**
School of Engineering and Natural Sciences, University of Iceland
Merged defunct student organisations into one body representing postgraduate students, and managed its finances.
- 2009–2010** **Treasurer of BEST Reykjavík**
Board of European Students of Technology (BEST)
Represented BEST Reykjavík at the General Assembly and organised two academic courses hosting 20 European students.
- 2006–2007** **President of Stigull**
School of Engineering and Natural Sciences, University of Iceland
The undergraduate student organisation for Mathematics and Physics.

PUBLICATIONS

Peer-reviewed journal articles

- 2021** **Long-read sequencing of 3,622 Icelanders provides insight into the role of structural variants in human diseases and other traits**
Doruk Beyter, Helga Ingimundardóttir, Asmundur Oddsson, Hannes P. Eggertsson, Eythor Björnsson, Hakon Jonsson, Bjarni A. Atlason, Snaedis Kristmundsdóttir et al.
Nature Genetics, 53(6), pp. 779 – 786, Springer Nature, 2021
- 2021** **Ratatosk: hybrid error correction of long reads enables accurate variant calling and assembly**
Guillaume Holley, Doruk Beyter, Helga Ingimundardóttir, Peter L. Møller, Snaedis Kristmundsdóttir, Hannes P. Eggertsson, Bjarni V. Halldorsson
Genome Biology, 22(1), Springer Nature, 2021
- 2018** **Discovering dispatching rules from data using imitation learning: A case study for the job-shop problem**
Helga Ingimundardóttir, Thomas Philip Runarsson
Journal of Scheduling, 21(4), pp. 413 – 428, Springer Nature, 2018
- 2018** **Insights into imprinting from parent-of-origin phased methylomes and transcriptomes**
Florian Zink, Droplaug N. Magnúsdóttir, Olafur T. Magnússon, Nicolas J. Walker, Tiffany J. Morris, Asgeir Sigurdsson, Gisli H.

Halldorsson ... **Helga Ingimundardottir** et al.

Nature Genetics, 50(11), pp. 1542 – 1552, Nature Publishing Group, 2018

2011 **Detection of fouling in a cross-flow heat exchanger using wavelets**

Helga Ingimundardóttir, Sylvain Lalot

Heat Transfer Engineering, 32(3-4), pp. 349 – 357, Taylor and Francis Ltd., 2011

Selected papers, revised and extended

2026 **A Scalable Matheuristic for Routing Capacity-Constrained Groundfish Surveys**

Helga Ingimundardottir, Margret Thorsdottir, Bjarki Elvarsson, Thomas Philip Runarsson

Learning and Intelligent Optimization. LION 2026, Springer International Publishing, 2026, Accepted

2016 **Evolutionary learning of linear composite dispatching rules for scheduling**

Helga Ingimundardottir, Thomas Philip Runarsson

Studies in Computational Intelligence, 620, pp. 49 – 62, Springer Verlag, 2016

Peer-reviewed conference proceedings

2026 **Designing Authentic Industry-Engaged Assessment for Professional Competence in Business Intelligence**

Helga Ingimundardóttir

Proceedings of the 22nd International CDIO Conference, pp. 211 – 220, 2026 · [Slides](#)

2026 **Using Pull Requests to Make Collaboration Visible in CDIO Project-Based Courses**

Helga Ingimundardóttir

Proceedings of the 22nd International CDIO Conference, pp. 296 – 305, 2026 · [Slides](#)

2024 **Evolving Submodels for Column Generation in Cutting and Packing for Glulam Production**

Helga Ingimundardottir, Thomas Philip Runarsson

2024 IEEE Congress on Evolutionary Computation (CEC), IEEE, 2024 · [Recording](#)

2015 **Generating training data for learning linear composite dispatching rules for scheduling**

Helga Ingimundardóttir, Thomas Philip Runarsson

Lecture Notes in Computer Science, 8994, pp. 236 – 248, Springer International Publishing, 2015

2014 **Evolutionary Learning of Weighted Linear Composite Dispatching Rules for Scheduling**

Helga Ingimundardottir, Thomas Philip Runarsson

International Joint Conference on Computational Intelligence, 1, pp. 59 – 67, Science and Technology Publications, Lda, 2014

2012 **Determining the characteristic of difficult job shop scheduling instances for a heuristic solution method**

Helga Ingimundardottir, Thomas Philip Runarsson

Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 7219 LNCS, pp. 408 – 412, 2012

2011 **Sampling strategies in ordinal regression for surrogate assisted evolutionary optimization**

Helga Ingimundardottir, Thomas Philip Runarsson

International Conference on Intelligent Systems Design and Applications, ISDA, pp. 1158 – 1163, 2011

2011 **Supervised learning linear priority dispatch rules for job-shop scheduling**

Helga Ingimundardottir, Thomas Philip Runarsson

Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 6683 LNCS, pp. 263 – 277, 2011

Theses

2016 **ALICE: Analysis & Learning Iterative Consecutive Executions**

Helga Ingimundardottir

p. 265, University of Iceland, 2016

2010 **Detection of Fouling: Effectiveness Ratio Method**

Helga Ingimundardottir

p. 94, University of Iceland, 2010

Seminars and colloquia

2016 **ALICE: Analysis & Learning Iterative Consecutive Executions**

Helga Ingimundardottir

Statistics and Bioinformatics Seminar, deCODE Genetics, Reykjavík, Iceland, 2016

2013 **Supervising Learning Linear Composite Dispatch Rules for Scheduling**

Helga Ingimundardottir

ReiDok13 Symposium on Computational PhD Projects, School of Engineering and Natural Sciences, University of Iceland, 2013

2012 **Creating Meaningful Training Data for Difficult JSSP Instances for Ordinal Regression**

Helga Ingimundardottir

Seminar for Ph.D. students, School of Engineering and Natural Sciences, University of Iceland, 2012

2012 **Determining the Characteristic of Difficult JSSP Instances for a Heuristic Solution Methods**

Helga Ingimundardottir

Stats colloquium, School of Engineering and Natural Sciences, University of Iceland, 2012

TECHNICAL SKILLS

General purpose: C#, C++, Python; Numerical: MATLAB; Statistical: R, tidyverse; Databases: Microsoft SQL Server, PostgreSQL, SQLite, TimescaleDB; Optimisation: Gurobi, GLPK; Scripting and tooling: awk, grep, sed, make, git, Quarto

LANGUAGES

Icelandic (mother tongue) · English (fluent) · Danish (conversational) · French (conversational)

INTERESTS

Professional: heuristics, artificial intelligence, evolutionary computation, global optimisation, statistical learning, machine learning, big data, automation, data visualisation and real-world applications

Personal: knitting, sewing, arts and crafts, horticulture, podcasting, internet cats and Russian Blues