

# helga ingimundardóttir

computational engineer

## contact

Helga Ingimundard.  
Kogunarhaed 1  
Gardabaer IS-210  
Iceland

☎ (+354) 865 1341

✉ helga85@gmail.com

🌐 www.hi.is/~hei2

📧 tungufoss

📧 tungufoss

🌐 helgaingimundardottir

## languages

Icelandic mother tongue  
English fluency  
French & Danish  
conversational

## programming

all-purpose: C#, C++

numerical: MATLAB

parallel: MPI

statistical: R

linear: GLPK/MathProg,  
Gurobi

## education

- |              |  |                                      |
|--------------|--|--------------------------------------|
| 2009–Present | Ph.D. of Computational Engineering<br>Working on a doctorate on hyperheuristics under the guidance of Prof. Tomas Philip Runarsson. The main focus of the study is on Job Shop Scheduling Problems (JSSP) and Permutation Flow Shop Problems (PFSP) and how to automate the scheduling process using e.g. ordinal regression. Moreover I'm inspecting problem difficulty and algorithm's footprints.<br><b>courses in Ph.D. programme:</b> ethics of science and research, communication skills for doctoral students, leadership skills for doctoral students, research plans and applications writing, theoretical statistics, high performance computing A and B<br><b>expected defence:</b> summer 2015.   | The University of Iceland, Reykjavik |
| 2010–2012    | Graduate Diploma of School of Education<br>Teaching Studies for Higher Education.  | The University of Iceland, Reykjavik |
| 2008–2010    | Masters of Computational Engineering<br><i>Detection of Fouling: Effectiveness Ratio Method</i><br>The dissertation investigated the possibility of using models to detect fouling in a cross-flow heat exchangers, by only using measurements that are attainable in normal operation of the heat exchanger. The on-line detection of fouling is used by a new and more general method that also takes into account that the input can be varying.<br>The new method finds a threshold for fouling based on the estimate of the steady states of the effectiveness, which is done by applying a wavelet transform since the transform is localised in both time and frequency.<br>The parameters of the method need to be chosen carefully, e.g. compromise between the frequency and time localisation, thus a multiple objective genetic algorithm is implemented for the optimisation. | The University of Iceland, Reykjavik |
| 2005–2008    | Bachelor of Mathematics<br>Specialization in Computer Science  | The University of Iceland, Reykjavik |

## academic experience

- |           |  |                   |
|-----------|--|-------------------|
| 2011-2012 | University of Iceland, Industrial Engineering Department<br><i>Associate Lecturer (i. stundakennari)</i> in Operations Research<br>Responsible for the under graduate course Operations Research (IDN401G), spring semesters 2011 and 2012.<br>During that period, I restructured the course under the guidance of Gudrun Geirsdottir at School of Education. Moreover, as a result of my efforts in innovating the course design, assessment and evaluations of tutorials, I inspired a fellow teacher in Natural Sciences, and we were awarded a teaching grant for the University for developing our methods further. | Reykjavik Iceland |
|-----------|--|-------------------|

2007-2010	University of Iceland, Industrial Engineering Department <i>Assistant Teacher (i. dæmatímakennari)</i> , School of Engineering and Natural Sciences Worked as a tutor during tutorials, correcting and working through handouts for the following under graduate courses: <ul style="list-style-type: none"> <li>• Linear Algebra</li> <li>• Simulations</li> <li>• Operational Research</li> <li>• Calculus IB</li> <li>• Numerical Analysis</li> </ul>	Reykjavik Iceland  Autumn 2007 Spring 2008 Spring 2008 Autumn 2009 Spring 2010
-----------	--	--

## work experience

2015–Now	RANNIS <i>Advisor</i> in Technology Development Fund I'm one of twelve advisers that review all grant applications submitted to the Technology Development Fund at The Icelandic Centre for Research (RANNIS). The role of the fund is to support R&D in the field of technological development aimed at innovation in the Icelandic economy. Donations in the Technology Development Fund 2004-2014 were a total 8,580 million ISK, thereof 1,372.5 million ISK for 2015.	Reykjavik, Iceland
2013–Now	VALKA <i>Computational Engineer</i> in Research and Development Full time researcher at Valka, which specializes in the development and marketing of equipment and automation solutions for the fish processing industry. Valka was the recipient of the Icelandic Innovation Award 2013. Detailed achievements: <ul style="list-style-type: none"> <li>• Designed and implemented an intelligent fish portioning algorithm, based on fillet's X-Ray imagery.</li> <li>• Generalised their fish bone detection algorithm in order to analyse more species. Fast calculations, yet sufficiently accurate, for real-world processing plants.</li> <li>• Collaborator on three dimensional visualisation of fish bones, based on stereo-vision.</li> <li>• Conducted and prepared reports for efficiency tests.</li> </ul>	Kopavogur, Iceland
2007-2009	LANDSBANKINN <i>Summer Intern</i> at Testing Department Worked on making automated tests in Quick Time Professional for personal on-line banking. <i>Summer Intern</i> at Quantitative Research and Trading Support for the FX and Derivatives Sales Worked on estimating the behaviour of the EUR/ISK currency cross using Support Vector Machines. <i>Summer Intern</i> at Business Support Worked on Level 1 technical support. It entailed setting up software and providing elementary technical assistance to the employees of Landsbankinn via phone or remotely accessing their computers.	Reykjavik, Iceland

## communication skills

- 2015 Oral Presentation 9th Int'l Conference on Learning and Intelligent Optimization (LION9)  
Presented the paper *Generating Training Data for Supervised Learning Linear Composite Dispatch Rules for Scheduling*, Lille, France.
- 2012 Oral Presentation 6th Int'l Conference on Learning and Intelligent Optimization (LION6)  
Presented the paper *Determining the Characteristic of Difficult Job Shop Scheduling Instances for a Heuristic Solution Method*, Paris, France.
- 2011 Oral Presentation 11th Int'l Conference on Intelligent Systems Design and Applications (ISDA)  
Presented the paper *Sampling Strategies in Ordinal Regression for Surrogate Assisted Evolutionary Optimization*, Cordoba, Spain.
- 2010 Oral Presentation 5th Int'l Conference on Learning and Intelligent Optimization (LION5)  
Presented the paper *Supervised Learning Linear Priority Dispatch Rules for Job-Shop Scheduling*, Rome, Italy
- 2010 Invited speaker Silisian University, Gliwice, Poland  
In collaboration with Prof. Waldemar Grzechca at the Silisian University, I was invited to present my Ph.D. research to their faculty.
- 2009 Poster 11th Int'l Conference on Heat Exchanger Fouling and Cleaning  
Presented the paper *Detection of Fouling in a Cross-Flow Heat Exchanger Using Wavelets*, Schladming, Austria.
- 2009 Presentation University of Valenciennes and Hainaut-Cambresis, Valenciennes, France  
As part of the collaboration with Sylvain Lalot (my M.Sc. co-advisor), I presented the research for my Masters degree in Computational Engineering for faculty at the ENSIAME department at UVHC.

## grants

- 2012 Grant for Teaching Development Univeristy of Iceland, Kennslumálaskjöldur  
Grant for implementing a new teaching method for tutorials in Engineering and Natural Sciences. Collaboration between Engineering faculty and Natural Sciences faculty.
- 2009-2012 Postgraduate Scholarship University of Iceland Research Fund  
Three year stipend for doctoral studies.
- 2010 Mobility grant Fundusz Stypendialny i Szkoleniowy (FSS)  
Mobility grant to visit Silisian University, Gliwice, Poland.
- 2009 Postgraduate Scholarship French Embassy  
Awarded to Icelandic students pursuing a Masters degree.

## awards

- |      |   |   |
|------|---|---|
| 2015 | Nominated for Best Paper award  | 9th Int'l Conference on Learning and Intelligent Optimization |
|      | I had one of three full-paper submission nominated for Best Paper award, on my paper <i>Evolutionary Learning of Weighted Linear Composite Dispatching Rules for Scheduling</i> . |   |
| 2005 | Magna cum laude   | The Commercial College of Iceland, Reykavik, Iceland          |
|      | Awarded for being the top third student in my final year of a Baccalaureate degree.   |   |

## extracurricular activity

- |           |  |   |
|-----------|--|---|
| 2014-Now  | Treasurer of SALKA   | Company union at Valka ehf.   |
| 2011-2012 | Graduate student representative  | Science Committee in Engineering and Natural Sciences               |
| 2009-2011 | Treasurer of HERON   | Student union for postgraduates in Engineering and Natural Sciences |
| 2011-2012 | Graduate student representative  | Science Committee in Engineering and Natural Sciences               |
| 2009-2010 | Treasurer of BEST Reykjavik  | Reykjavik division for Board of European Students of Technology     |
|           | Participated in the BEST General Assembly 2009 in Budapest, Hungary, on behalf of BEST Reykjavik.  |   |
|           | Helped organize two BEST academic courses on technology at the University of Iceland, where we housed and entertained roughly 20 European students in engineering over a course of a week. |   |
| 2006-2007 | President of STIGULL   | Student union for undergraduates in Mathematics and Physics         |

## interests

**professional:** heuristics, artificial intelligence, evolutionary computation, global optimisation, statistical learning, machine learning, real world applications

**personal:** knitting, sewing, general arts and crafts, occasional French lessons, internet cats

## publications

Literature available on **Research Gate**

### article in peer-reviewed journals

Detection of Fouling in a Cross-Flow Heat Exchanger Using Wavelets

Helga Ingimundardottir, Sylvain Lalot

*Heat Transfer Engineering* 32.3-4 (2011) pp. 349–357. 2011

### thesis

Detection of Fouling: Effectiveness Ratio Method

Helga Ingimundardottir

*Master's thesis, University of Iceland, 2011, Reykjavik, Iceland*

### international peer-reviewed conferences/proceedings

Generating Training Data for Supervised Learning Linear Composite Dispatch Rules for Scheduling

Helga Ingimundardottir, Thomas Philip Runarsson

*9th International Conference on Learning and Intelligent Optimization (LION'09)*, 2015

Evolutionary Learning of Weighted Linear Composite Dispatching Rules for Scheduling

Helga Ingimundardottir, Thomas Philip Runarsson

*International Conference on Evolutionary Computation Theory and Applications (ECTA)*, 2014

Determining the Characteristic of Difficult Job Shop Scheduling Instances for a Heuristic Solution Method

Helga Ingimundardottir, Thomas Philip Runarsson

*Learning and Intelligent Optimization (LION6)*, 2012, Paris, France

Supervised Learning Linear Priority Dispatch Rules for Job-Shop Scheduling

Helga Ingimundardottir, Thomas Runarsson

*Learning and Intelligent Optimization (LIONS)*, 2011, Rome, Italy

Sampling Strategies in Ordinal Regression for Surrogate Assisted Evolutionary Optimization

Helga Ingimundardottir, Thomas Philip Runarsson

*Intelligent Systems Design and Applications (ISDA)*, 11th International Conference on, 2011, Cordoba, Spain

Detection of Fouling in a Cross-Flow Heat Exchanger Using Wavelets

Helga Ingimundardottir, Sylvain Lalot

*International Conference of Heat Exchanger Fouling and Cleaning VIII*, 2009, Schlading, Austria

### seminars

Supervising Learning Linear Composite Dispatch Rules for Scheduling

Helga Ingimundardottir

*ReiDok13 Symposium on Computational PhD Projects*, 22. April Apr., 2013

Creating Meaningful Training Data for Difficult JSSP Instances for Ordinal Regression

Helga Ingimundardottir

*Seminar for Ph.D. students*, 28. March Mar., 2012

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

Helga Ingimundardottir

*Stats colloquium*, 16. February Feb., 2012

Generating Training Data for Learning Linear Composite Dispatching Rules for Scheduling

Helga Ingimundardottir

*ReiDok12 Symposium on Computational PhD Projects*, 3. December Dec., 2012

Supervised Learning Linear Priority Dispatch Rules for Job-Shop Scheduling

Helga Ingimundardottir

*Research Symposium, RVoN*, 9. October Oct., 2010