



Sæmundur Óskar
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0000-0003-0395-5884

About Me I am a 36 year old Icelandic research fellow, husband, a father of two, and living in Scotland. I strive to do my best in whatever task I undertake. I live by two mottos: “If something is worth doing, it is worth doing well” and “Never give up”. My general interests include spending time with my family, preferably doing some outdoor activities like hill walking or cycling.

Dr Sæmundur Óskar Haraldsson

MSc Industrial Engineer and Computer Scientist PhD

Education

PhD in Computing Science

Graduated in November 2017 from the University of Stirling.

MSc in Industrial Engineering

Graduated in November 2012 from the University of Iceland.

BS in Industrial Engineering

Graduated in June 2009 from the University of Iceland

Employment and Research Experience

July 2017 - present, CEO, Easy Advanced Systems Ltd

Co-founder, board director and CEO of a start-up software development company that specialises in using **Artificial Intelligence** for data analysis and predictive modelling. The company is incorporated in Scotland and its current customer base is Icelandic health care.

June 2017 - present, Research Fellow, University of Stirling

Two positions, working on the DAASE project (<http://daase.cs.ucl.ac.uk>).

- Research Fellow, October 2017 – present
- Research Assistant, June 2017 – October 2017

August 2016 - present, Teacher, University of Stirling

I have demonstrated in labs and given numerous lectures for the module, *Representing and Manipulating Data*

May 2013 - May 2017, Postgraduate Student, University of Stirling

Thesis title: "*Genetic Improvement of Software: From Program Landscapes to the Automatic Improvement of a Live System*". I was funded by the EPSRC (EP/J017515/1) as part of the DAASE project, which is a multiple site collaboration.

Sept. 2012 - August 2017, Engineer, Janus Rehabilitation (JR), Reykjavík

Manager of research and development of software solutions for the rehabilitation process making JR a leading entity in the development of vocational rehabilitation. **Lead statistician** providing coordination of statistical analyses for reports, government assessments and published material.

September 2008 - May 2013, Teacher, University of Iceland

Alongside my studies at the University of Iceland I took on various teaching roles for 14 courses. Coordinating an entire module, giving at least 50% of lectures for other modules, and demonstrating as an assistant teacher.

August 2009 - August 2012, University of Iceland, MSc project

Thesis title: *Semi-Automatic Analysis of Large Textfile Datasets for Forensic Investigations*. 2012. Development of a Machine Learning framework to assist in forensic investigation.



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Teaching experience

University of Stirling, 2016–present

Representing and Manipulating Data (2016/7-2017/8),
Demonstrator/Lecturer

University of Iceland, 2008–2013

I had the following teaching roles while studying at the University of Iceland.

Module Coordinator for the module "*Simulation*" (Spring 2013).

This is a 3rd year course for engineering students which teaches the use of **statistics and data analysis** for simulating various processes. I was responsible for the course in its entirety.

Teacher for the following three courses: *Software Development (Spring 2013)*, *Mathematics and Scientific Computing (Spring 2012 and 2013)*, and *Computers and Operating Systems (Fall 2011)*.

I was responsible for giving at least 50% of the lectures, making and marking assignments, and marking tests.

Assistant Teacher for the following six courses: *Mathematical Structures for Computer Science (Fall 2012)*, *Computer Science 1/1a (Fall 2008, 2009 and 2012)*, *Operations Research (Spring 2009, 2010 and 2011)*, *Mathematical Analysis IC/IB (Fall 2008 and 2011)*, *Simulation (Spring 2011)*, and *Linear Algebra B (Fall 2008)*

I was responsible for demonstrating in labs and marking assignments.

Successful Grant applications

2017 SIGSOFT CAPS, \$900

Travel grant to present at SBST in Buenos Aires

2017 VIRK – Vocational Rehabilitation Fund, £4500

Co-investigator on a grant to research the Icelandic Quality of Life index

Presentations and Demonstrations

2018, *Oral Presentation, FIAR-NET*

Invited talk in a FIAR-NET workshop on *Automatic bug fixing*, <https://www.fiarnet.org>

2017, *Oral Presentation, Janus Rehabilitation*

Invited talk in Janus Rehabilitation on *Automatic bug fixing*, <https://tinyurl.com/janus-award-talks>

2017, *Oral Presentation, Janus Rehabilitation*

Invited talk in Janus Rehabilitation on **Dynamic Predictive Models**, <https://tinyurl.com/janus-award-talks>

2017, *Oral Presentation, 50th Crest Open Workshop*

Invited talk in University College London titled: *Janus Manager, the self-improving software system*, http://crest.cs.ucl.ac.uk/cow/50/videos/haraldsson_cow50_480p.mp4

2016, *Oral Presentation, 45th Crest Open Workshop*

Invited talk in University College London titled: *Fixing bugs in Python programs with Genetic Improvement: Program size and search granularity*, http://crest.cs.ucl.ac.uk/cow/45/videos/haraldsson_cow45_480p.mp4

2016/2017 *Poster Presentation, SICSA DemoFest*

I presented my research and innovations at two consecutive DemoFests



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Honors, positions and awards

PPSN Tutorial

I am leading a tutorial in association with John R. Woodward on Genetic Improvement of Software at the 15th International Conference on Parallel Problem Solving from Nature, September 2018.

Workshops chair

- Co-chair of the 5th edition of the Genetic Improvement workshop at GECCO 2018
<http://gecco-2018.sigevo.org/index.html/Workshops>
- Co-chair and editor of Symposium on Computational PhD/post doc projects (2012 and 2013)
<https://cs.hi.is/reidok12/> and <https://cs.hi.is/reidok13/>

Visiting Fellow

I am a Visiting Fellow at the Icelandic Heart Association, where I have spent time working on analysing and modelling risk of coronary heart disease in their numerous datasets.

2 Best paper awards

- "*Fixing Bugs in Your Sleep: How Genetic Improvement Became an Overnight Success.*" at the GI workshop 2017.
- "*The Use of Predictive Models in Dynamic Treatment Planning*" in ICTS4eHealth 2017.

Humies finalist

I was a finalist in the 2017 "Humies" Awards For Human-Competitive Results Produced By Genetic And Evolutionary Computation

Converge Challenge finalist

My company, "Easy Advanced Systems Ltd.", was a top 10 finalist out of 212 entrants in the KickStart category in the 2017 Converge Challenge.

Program committees

I have been on the program committee for all editions of the Genetic Improvement workshop. I also sat on the program committee for the AI4Health workshop 2018

Board memberships

2010-2011 Chairman of Heron, student society for postgraduates in engineering, computer science, mathematics and physics, University of Iceland.

2011-2012 President of Arkimedes, society for the PhD students and Post Docs of the School of Engineering and Natural Sciences of the University of Iceland.

2010-2012 Postgraduate representative on the School Board in the School of Engineering and Natural Sciences, University of Iceland.

Theme leader

I presented the findings for 1 of 4 themes of the DAASE project which is a £6.000.000 EPSRC multi-site project.



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Selected Publications

Theses

- S.O. Haraldsson, "Genetic Improvement of Software: From Program Landscapes to the Automatic Improvement of a Live System" (Doctoral thesis), Department of Computing Science and Mathematics, University of Stirling, 2017.
- S.O. Haraldsson, "Semi-Automatic Analysis of Large Textfile Datasets for Forensic Investigations" (Masters thesis), Faculty of Industrial Engineering, Mechanical Engineering and Computer Science, University of Iceland, 2012.

Journals

- S.O. Haraldsson, R.D. Brynjolfsdottir, J.R. Woodward, K. Siggeirsdottir, and V. Gudnason, *Dynamically Predicting Treatment Outcome in Vocational Rehabilitation*, Journal of Network and Computer Applications, submitted, 2018.
- J. Petke, S.O. Haraldsson, M. Harman, W.B. Langdon, D.R. White and J.R. Woodward, *Genetic Improvement of Software: a Comprehensive Survey* IEEE Transactions on Evolutionary Computation, vol. PP, no. 99, pp. 1-1.
- K. Siggeirsdottir, R. D. Brynjolfsdottir, S. O. Haraldsson, S. Vidar, E. G. Gudmundsson, J. H. Brynjolfsdottir, H. Jonsson, O. Hjaltason and V. Gudnason, *Determinants of outcome of vocational rehabilitation* WORK: A Journal of Prevention, Assessment & Rehabilitation, 55(3):577-583, 2016.

Proceedings

- S.O. Haraldsson, R.D. Brynjolfsdottir, V. Gudnason, K. Tomasson and K. Siggeirsdottir, *Predicting Changes in Quality of Life for Patients in Vocational Rehabilitation*, The 2018 IEEE Conference on Evolving and Adaptive Intelligent Systems (EAIS 2018), submitted, 2018
- S.O. Haraldsson, J.R. Woodward, A.E.I. Brownlee and D.Cairns. *Exploring Fitness and Edit Distance of Mutated Python Programs*. In EuroGP 2017, Lecture Notes in Computer Science. Springer Berlin Heidelberg
- Z. Kocsis, G. Neumann, J. Swan, M. Epitropakis, A.E.I. Brownlee, S.O. Haraldsson and E. Bowles. *Repairing and optimizing Hadoop hashCode implementations*. In SSBSE 2014, August 26 - 29, 2014, Lecture Notes in Computer Science, pages 259–264. Springer Berlin Heidelberg

Workshops

- S.O. Haraldsson, R.D. Brynjolfsdottir, J.R. Woodward, K. Siggeirsdottir and V. Gudnason. *The Use of Predictive Models in Dynamic Treatment Planning* In ICTS4eHealth, ISCC Crete, 2017 (**Best paper**)
- S.O. Haraldsson, J.R. Woodward, A.E.I. Brownlee, A.V. Smith and V. Gudnason. *Genetic Improvement of Runtime and its Fitness Landscape in a Bioinformatics Application* Proceedings of the Companion Publication of the 2014 Annual Conference on Genetic and Evolutionary Computation, Berlin, Germany, Jul. 2017. ACM
- S.O. Haraldsson, J.R. Woodward, A.E.I. Brownlee and K. Siggeirsdottir. *Fixing Bugs in Your Sleep: How Genetic Improvement Became an Overnight Success*. Proceedings of the Companion Publication of the 2014 Annual Conference on Genetic and Evolutionary Computation, Berlin, Germany, Jul. 2017. ACM (**Best paper**)
- S.O. Haraldsson, J.R. Woodward and A.E.I. Brownlee. *The Use of Automatic Test Data Generation for Genetic Improvement in a Live System*. In SBST 2017, Buenos Aires, Argentina, May 2017, IEEE
- S.O. Haraldsson and J.R. Woodward, *Genetic Improvement of Energy Usage is only as Reliable as the Measurements are Accurate*. In GI, GECCO, Madrid, Spain, July 2015, pp.821-822. ACM
- Saemundur O. Haraldsson and John R. Woodward. *Automated Design of Algorithms and Genetic Improvement: Contrast and Commonalities*. Proceedings of the Companion Publication of the 2014 Annual Conference on Genetic and Evolutionary Computation, Vancouver, Canada, Jul. 2014. ACM

Miscellaneous

- S.O. Haraldsson, A.E.I. Brownlee, and J.R. Woodward. *Computers will soon be able to fix themselves—are IT departments for the chop?*. The Conversation (2017).
- K. Siggeirsdottir, H. Jonsson, H. Thordardottir, O. Hjaltason, R. Kristinsdottir, S. Vidar, S.O. Haraldsson, U. Alferdsdottir. *Janusar aðferðarfræðin: Ný nálgun í læknisfræðilegri geðendurhæfingu (e. The Janus methodology: A new approach for medical rehabilitation of the mentally dysfunctional)*, The Icelandic Medical Journal, 2012/98:673