

# Anna Syberfeldt

Professor in Production Engineering

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## Academic position

I am employed as a professor within Production Engineering at the University of Skövde. I got my PhD from De Montfort University, UK, in 2009 and my docent appointment in 2014. Since 2016 I am the leader of the research group “Production and Automation Engineering” at the University of Skövde, which consists of approximately 40 researchers working within the area of virtual engineering. The group’s research is to a large extent applied and carried out in close cooperation with industrial partners, mainly within the manufacturing industry but also with partners found in the public sector. As the research leader, I have the overall responsibility for the scientific quality and scientific development of the group, including, amongst others, to set a research strategy, ensure academic excellence, secure relevant recruitments, plan publications, applying for external funding, and many other things.

## Scientific publications

### Journal Publications

**Syberfeldt, A.** and Smedberg, H. (2018) Ant Colony Optimization For Solving Real-World Pickup And Delivery Problems With Hard Time Windows. *World Review of Intermodal Transportation Research. Accepted with revisions.*

**Syberfeldt, A.** and Rogström, J. (2018) A two-step multi-objectivization method for improved evolutionary optimization of industrial problems, Volume 40, pp. 331-340.

Gustavsson, P. and **Syberfeldt, A.** (2018) A new algorithm using the non-dominated tree to improve non-dominated sorting. *Evolutionary Computation*, Volume 26, Issue 1, pp. 89-116.

Fathi, M., **Syberfeldt, A.**, Ghobakhloo, M. and Eskandari, H. (2018) An optimization model for material supply scheduling at mixed-model assembly lines. *Procedia CIRP*, Volume 72, pp. 1258-1263.

Gustavsson P., Holm M., **Syberfeldt A.** and Wang, L. (2018) Human-robot collaboration – towards new metrics for selection of communication technologies. *Procedia CIRP*, Volume 72, pp. 123-128.

Danielsson, O., **Syberfeldt A.**, Holm, M. and Wang, L. (2018) Operators perspective on augmented reality as a support tool in engine assembly. *Procedia CIRP*, Volume 72, pp. 45-50.

Flores Garcia, E., Ruiz Zúñiga, E., Bruch, J., Urenda Moris, M. and **Syberfeldt, A.** (2018) Simulation-based Optimization for Facility Layout Design in Conditions of High Uncertainty. *Procedia CIRP*, Volume 72, pp. 334-339.

- Syberfeldt, A.**, Danielsson, O. and Gustavsson, P. (2017) Augmented reality smart glasses in the smart factory: product evaluation guidelines and review of available products. *IEEE Access*, Volume 5, Issue 1, pp. 9118–9130.
- Syberfeldt, A.** and Ekblom, T. (2017) A comparative evaluation of the GPU vs. the CPU. *International Journal of Computer Science and Information Technology*, Volume 9, Issue 3, pp. 1–14.
- Holm, M., Danielsson, O., **Syberfeldt, A.**, Wang, L. and Moore, P. (2017) Adaptive instructions to novice shop floor operators using augmented reality. *Journal of Industrial and Production Engineering*, Issue 5, pp. 362–374.
- Larsson, C., Säfsten, K. and **Syberfeldt, A.** (2017) How to visualize performance measures in a manufacturing SME. *Measuring Business Excellence*. *Accepted, to appear*.
- Strand, M., **Syberfeldt, A.** and Geertsen, A. (2017) A decision-support system for sustainable waste collection. *International Journal of Decision-Support System Technology*, Volume 9, Issue 4, pp. 49–65.
- Gustavsson, P., **Syberfeldt, A.**, Danielsson, O. and Brewster-Lindgren, R. (2017) Human-robot collaboration demonstrator combining speech recognition and haptic control. *Procedia CIRP, Special Issue on Manufacturing Systems 4.0*, M. Tseng (Eds.), Volume 63, pp. 396-401.
- Danielsson, O., **Syberfeldt, A.**, Gustavsson, P. and Brewster-Lindgren, R. (2017) Assessing instructions in augmented reality for human-robot collaborative assembly by using demonstrators. *Procedia CIRP, Special Issue on Manufacturing Systems 4.0*, M. Tseng (Eds.), Volume 63, pp. 89-94.
- Syberfeldt, A.**, Danielsson, O., Holm, M., Wang, L. and Brewster-Lindgren, R. (2016) Support systems on the industrial shop-floors of the future: Operators' perspective on augmented reality. *Procedia CIRP*, Volume 44, pp. 108–113.
- Fornlöf, V., Galar, D., **Syberfeldt, A.** and Almgren, T. (2016) RUL estimation and maintenance optimization for aircraft engines: A system of systems approach. *International Journal of Systems Assurance Engineering and Management*, Volume 7, Issue 4, pp. 450–461.
- Syberfeldt, A.**, Danielsson, O., Holm, M. and Wang, L. (2016) Dynamic operator instructions based on augmented reality and expert systems. *Procedia CIRP*, Volume 41, pp. 346–351.
- Syberfeldt, A.** and Gustavsson, P. (2015) Robust product sequencing through evolutionary multi-objective optimisation. *International Journal of Manufacturing Research*, Volume 10, Issue 4, pp. 371–383.
- Syberfeldt, A.**, Rogström, J. and Geertsen, A. (2015) Simulation-based optimization of a real-world travelling salesman problem using an evolutionary algorithm with a repair function. *International Journal of Artificial Intelligence and Expert Systems*, Volume 6, Issue 3, pp. 27–39.
- Syberfeldt, A.**, Danielsson, O., Holm, M. and Wang, L. (2015) Visual assembling guidance using augmented reality. *Procedia Manufacturing*, Volume 1, pp. 98–108.

**Syberfeldt, A.**, Andersson, M., Ng, A. and Bengtsson, V. (2015) Multi-objective evolutionary optimization of personnel scheduling. *International Journal of Artificial Intelligence & Applications*, Volume 6, Issue 1, pp. 41–52.

**Syberfeldt, A.** and Gustavsson, P. (2014) Increased robustness of product sequencing using multi-objective optimization. *Procedia CIRP*, Volume 17, pp. 434–439.

**Syberfeldt, A.**, Karlsson, I., Ng, A., Svantesson, J. and Almgren, T. (2013) A web-based platform for the simulation-optimization of industrial problems. *Computers & Industrial Engineering*, Volume 6, Issue 4, pp. 987–998.

Ng, A.H.C., Bernedixen, J. and **Syberfeldt, A.** (2012). A comparative study of production control mechanisms using simulation-based multi-objective optimization. *International Journal of Production Research*, Volume 50, Issue 2, pp. 359–377.

Lundell, B., Lings, B. and **Syberfeldt, A.** (2011) Practitioner perceptions of open source software in the embedded systems area. *Journal of Systems and Software*, Volume 84, Issue 9, pp. 1540–1549.

**Syberfeldt, A.**, Ng, A., John, R.I. and Moore, P. (2010) Evolutionary optimisation of noisy multi-objective problems using confidence-based dynamic resampling. *European Journal of Operation Research*, Volume 204, Issue 3, pp. 533–544.

**Syberfeldt, A.**, Ng, A., John, R.I. and Moore, P. (2009) Multi-objective evolutionary simulation-optimisation of a real-world manufacturing problem. *Robotics and Computer-Integrated Manufacturing*, Volume 25, pp. 926–931.

### Submitted Journal Publications

Larsson, C. and **Syberfeldt, A.** (2018) Communicating performance measures: Current practice in manufacturing SMEs. *Submitted to Journal of Engineering, Project, and Production Management*.

Strand, M. and **Syberfeldt, A.** (2018) Incorporating external data in a BI-solution at a public waste management organization. *Submitted to International Journal of Decision-Support System Technology*.

Strand, M. and **Syberfeldt, A.** (2018) Incorporating External Data into a BI Solution at a Public Waste Management Organization. *Submitted to International Journal of Business Intelligence Research*.

Fathi, M., Nourmohammadib, A., Ng, A. and **Syberfeldt, A.** (2018) An optimization model for balancing assembly lines with stochastic task times and zoning constraints. *Submitted to IEEE Access*.

Fathi, M., Ghobakhloo, M. and **Syberfeldt, A.** (2018) An Interpretive Structural Modeling of Teamwork Training in Higher Education. *Submitted to Education Sciences*.

### Book Chapters<sup>1</sup>

Fornlöf, V., **Syberfeldt, A.**, Galar, D. and Almgren, T. (2016) On-condition parts versus life limited parts: A trade off in aircraft engines. *Current Trends in Reliability, Availability, Maintainability and Safety: An Industry Perspective*, Lecture Notes in Mechanical Engineering, U. Kumar, A. Ahmadi, A.K. Verma, P. Varde (Eds.), Springer, pp. 253–262. ISBN 978-3-319-23597-4

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<sup>1</sup> Note that I changed my last name from Persson to Syberfeldt in 2008.

**Syberfeldt, A.** (2014) Multi-Objective Optimization of a Real-World Manufacturing Process Using Cuckoo Search. Cuckoo Search and Firefly Algorithm, Studies in Computational Intelligence, X.-S. Yang (Ed.), Springer, pp. 179–193. ISBN: 978-3-319-02140-9

**Syberfeldt, A.,** Oscarsson, D., Holm, M. and Ekblom, T. (2014) Augmented Reality at the Industrial Shop Floor. Augmented and Virtual Reality, Lecture Notes in Computer Science, L.T. De Paolis and A. Mongelli (Eds.), Springer, pp 201–209. ISBN 978-3-319-13969-2

**Persson, A.,** Grimm, H. and Ng, A. (2008) A Metamodel-Assisted Steady-State Evolution Strategy for Simulation-Based Optimization. Current Trends in Intelligent Systems and Computer Engineering, Lecture Notes in Electrical Engineering, O. Castillo, Xu, L. and S-I. Ao (Eds.), Springer, pp. 1–13. ISSN: 1876-1100

Ng, A., Grimm, H., Lezama, T., **Persson, A.,** Andersson, M. and Jägstam, M. (2008) OPTIMISE: An Internet-Based Platform for Metamodel-Assisted Simulation Optimization. Advances in Communication Systems and Electrical Engineering, X. Huang, Y-S. Chen and S-I. Ao (Eds), Springer, pp. 281–296. ISBN: 978-0-387-74937-2

**Persson, A.,** Gustavsson, H., Lings, B., Lundell, B., Mattsson, A. and Ärlig, U. (2006) Adopting open source development tools in a commercial production environment – are we locked in?. Advanced Topics in Database Research, Global Information Technologies: Concepts, Methodologies, Tools, and Applications, F.B. Tan (Ed.), Idea Group Publishing, pp. 28–40. ISBN13: 9781599049397

### Conference Publications (peer-reviewed full papers)

**Syberfeldt, A.,** Ayani, M. and Holm, M. (2018) A holistic solution for integrating a simulated twin of an automation system during the system's entire life-cycle. International Conference on Manufacturing Research. Advances in Manufacturing Technology XXXII: Proceedings of the 16th International Conference on Manufacturing Research, pp. 405-410.

Liu, Y., **Syberfeldt, A.** and Strand, M. (2018) A review of simulation-based life cycle assessment in manufacturing industry. Advances in Manufacturing Technology XXXII: Proceedings of the 16th International Conference on Manufacturing Research, pp. 381-386.

Aslam, T., **Syberfeldt, A.,** Ng, A., Pehrsson, L. and Urenda Moris, M. (2018) Towards an industrial testbed for holistic virtual production development. International Conference on Manufacturing Research. Advances in Manufacturing Technology XXXII: Proceedings of the 16th International Conference on Manufacturing Research, pp. 369-374.

Ruiz Zúñiga, **Syberfeldt, A.,** E., Urenda Moris, M. and Oscarsson, J. (2017) Integrating simulation-based optimization, lean, and the concepts of industry 4.0. Proceedings of 2017 Winter Simulation Conference, pp. 828-839.

Ruiz Zúñiga, E., **Syberfeldt, A.** and Urenda Moris, M. (2017) The Internet of Things, Factory of Things and Industry 4.0 in Manufacturing: Current and Future Implementations. Proceedings of International Conference on Manufacturing Research. Proceedings of the 15th International Conference on Manufacturing Research, pp. 221-226.

Larsson, C., Strand, M., Persson, A. and **Syberfeldt, A.** (2017) Communicating continuous improvement in manufacturing companies: Divergencies between current practice and theory.

Proceedings of PMAA: Performance Measurement Association Australasia 2017, Dunedin, New Zealand, March 1–3, 2017.

**Syberfeldt, A.**, Ayani, M., Holm, M., Wang, L. and Brewster-Lindgren, R. (2016) Localizing operators in the smart factory: A review of existing techniques. Proceedings of 2016 International Symposium on Flexible Automation, Cleveland, Ohio, August 1–3, 2016, pp. 186–192.

Fornlöf, V., Galar, D., **Syberfeldt, A.** and Almgren, T. (2016) Maintenance, prognostics and diagnostics approaches for aircraft engines. Proceedings of the 3rd IEEE International Workshop on Metrology for Aerospace, Florence, Italy, June 22–23, 2016, pp. 403–407.

Liu, Y., **Syberfeldt, A.**, Urenda Morris, M., Jägstam, M., Everbring, J. and Kloo, H. (2016) Evaluating environmental impacts of production process by simulation based life cycle assessment. Proceedings of the 7th Swedish Production Symposium, Lund, Sweden, October 25–27, 2016.

Frantzén, M., Holm M., **Syberfeldt, A.** and Ng, A. (2016) Dynamic maintenance priority of a real-world machining line. Proceedings of the 7th Swedish Production Symposium, Lund, Sweden, October 25–27, 2016.

Ruiz Zúñiga, E., Urenda Moris, M. and **Syberfeldt, A.** (2016) A simulation-based multi-objective optimization approach for production and logistics considering the production layout. Proceedings of the 7th Swedish Production Symposium, Lund, Sweden, October 25–27, 2016.

Ruiz Zúñiga, E., Urenda Moris, M. and **Syberfeldt, A.** (2016) Production logistics design and development support: A simulation-based optimization case study (WIP). Proceedings 2016 Summer Simulation Multi-Conference, Montreal, Canada, July 24–27, 2016.

Larsson, C., Säfsten, K. and **Syberfeldt, A.** (2015) Performance measurement follow-up supporting continuous improvements in manufacturing companies: A systematic review. Proceedings of the 22nd EurOMA conference: Operations management for sustainable competitiveness, Neuchâtel, Switzerland, June 26–July 1, 2015.

Andersson, M., Bandaru, S., Ng, A. and **Syberfeldt, S.** (2015) Parameter Tuned CMA-ES on the CEC'15 Expensive Problems. Proceedings of the 2015 IEEE Congress on Evolutionary Computation, Sendai, Japan, May 25–28, 2015. pp. 5162–5169.

Andersson, M., Bandaru, S., Ng, A. and **Syberfeldt, S.** (2015) Parameter tuning of MOEAs using a nested optimization approach. Proceedings of the 8<sup>th</sup> International Conference on Evolutionary Multi-Criterion Optimization. Guimaraes, Portugal, March 29–April 1, pp. 233–247.

**Syberfeldt, A.**, Gustavsson, P., Svantesson, J. and Almgren, T. (2014) A case study of evolutionary simulation based optimization in aircraft engine manufacturing. Proceedings of Industrial Simulation Conference, June 11–13, Skövde, Sweden, pp. 91–96.

Karlsson, I., Ng, A. and **Syberfeldt, A.** (2014) Interactive and intelligent decision support in manufacturing using simulation-based innovation and cloud computing. Proceedings of Industrial Simulation Conference, June 11–13, Skövde, Sweden, pp. 69–74.

- Andersson, M., **Syberfeldt, A.**, Ng, A. and Bengtsson, V. (2014) Evolutionary simulation-optimization of personnel scheduling. Proceedings of Industrial Simulation Conference, June 11–13, Skövde, Sweden, pp. 61–65.
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- Larsson, C., Säfsten, K. and **Syberfeldt, A.** (2014) Performance measurement communication supporting lean production in SMEs. Proceedings of Performance Management: Designing the High-Performing Organization, Aarhus, Denmark, June 25–27, 2014, pp. 714–725.
- Syberfeldt, A.** (2013) A framework for discrete event simulation of pick up and delivery problems. Proceedings of Industrial Simulation Conference, Ghent, Belgium, May 21–24, 2013, pp. 219–226.
- Syberfeldt, A.** (2013) Simulation optimization of waste collection based on ultrasonic level measurements. Proceedings of Industrial Simulation Conference, Ghent, Belgium, May 21–24, pp. 219–226.
- Syberfeldt, A.** and Lidberg, S. (2012) Real-world simulation-based manufacturing optimization using cuckoo search. Proceedings of Winter Simulation Conference, Berlin, Germany, December 9–12, 2012, pp. 1–12.
- Syberfeldt, A.**, Karlsson, I. and Ng, A.H.C. (2011). an industrial case study of web-based simulation-optimization. Proceedings of the 9th Industrial Simulation Conference, Venice, Italy, June 6–8, 2011, pp. 115–120.
- Syberfeldt, A.** and Syberfeldt, S. (2010). A serious game for understanding artificial intelligence in production optimization. Proceedings of IEEE Conference on Computational Intelligence and Games, Denmark, Copenhagen, August 18–21 2010, pp. 443–449.
- Syberfeldt, A.** (2010) A Lego factory for teaching simulation-based production optimization. Proceedings of Industrial Simulation Conference, Budapest, Hungary, June 7–9, 2010, pp. 89–94.
- Syberfeldt, A.** and Persson, L. (2009) Using heuristics for initiating the genetic population in simulation-based optimization of vehicle routing problems. Proceedings of Industrial Simulation Conference, Loughborough, United Kingdom, June 1–3, 2009, pp. 178–182.
- Lundell, B., **Syberfeldt, A.** and Karlsson, R. (2009) Open source for process control in production systems: Realizing its potential through a demonstrator. Proceedings of the Open Source Workshop, Skövde, Sweden, October 14–15, 2009.
- Syberfeldt, A.**, Grimm, H., Ng, A., Andersson, M. and Karlsson, I. (2008) Simulation-based optimization of a complex mail transportation network. Proceedings of the 2008 Winter Simulation Conference, Miami, Florida, December 7–10, 2008, pp. 2625–2631.
- Syberfeldt, A.**, Grimm, H. and Ng, A. (2008) Multi-objective simulation-based optimisation of production systems with consideration to noise. Proceedings of Swedish Production Symposium 2008, Gothenburg, Sweden, November 18–20, 2008.

**Syberfeldt, A.**, Grimm, H., Ng, A. and John, R.I. (2008) A parallel surrogate-assisted multi-objective evolutionary algorithm for computationally expensive optimization problems. Proceedings of the 2008 IEEE Congress on Evolutionary Computation, Hong Kong, June 1–6, 2008, pp. 3177–3184.

**Syberfeldt, A.**, Grimm, H., Ng, A. and Moore, P. (2008) Multi-objective evolutionary simulation-optimization of a real-world manufacturing problem. Proceedings of the 18th International Conference on Flexible Automation and Intelligent Manufacturing, Skövde, Sweden, June 30–July 2, 2008.

**Syberfeldt, A.**, Grimm, H. and Ng, A. (2008) Design of experiments for training metamodels in simulation-based optimisation of manufacturing systems. Proceedings of the 18th International Conference on Flexible Automation and Intelligent Manufacturing, Skövde, Sweden, June 30–July 2, 2008.

Ng, A., **Syberfeldt, A.**, Grimm, H. and Svensson, J. (2008) Multi-objective simulation optimization and significant dominance for comparing production control mechanisms. Proceedings of the 18th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM'08), Skövde, Sweden, June 30–July 2, 2008.

Andersson, M., **Persson, A.**, Grimm, H. and Ng, A. (2007) A web-based simulation optimization system for industrial scheduling. Proceedings of the 2007 Winter Simulation Conference, Washington DC, USA, 9–12 December, 2007, pp. 1844–1852.

**Persson, A.**, Grimm, H., Ng, A. and Andersson, M. (2007) Metamodel-assisted simulation-based optimisation of manufacturing systems. Proceedings of 5th International Conference on Manufacturing Research, Leicester, United Kingdom, September 11–13, 2007, pp. 174–178.

**Persson, A.**, Grimm, H., Ng, A. and Jägstam, M. (2007) A case study of using simulation and soft computing techniques for optimisation of manufacturing systems. Proceedings of Swedish Production Symposium 2007, Gothenburg, Sweden, August 28–30, 2007.

**Persson, A.**, Grimm, H., Andersson, M. and Ng, A. (2007) Metamodel-assisted simulation-based optimization of a real-world manufacturing problem. Proceedings of the 17th International Conference on Flexible Automation and Intelligent Manufacturing, Philadelphia, USA, June 18–20, 2007, pp 950–956.

Andersson, M., **Persson, A.**, Grimm, H. and Ng, A. (2007) Simulation-based scheduling using a genetic algorithm with consideration to robustness: a real-world case study. Proceedings of the 17th International Conference on Flexible Automation and Intelligent Manufacturing, Philadelphia, USA, June 18–20, 2007, pp 957–964.

**Persson, A.**, Grimm, H. and Ng, A. (2007) Metamodel-assisted global search using a probing technique. Proceedings of the IAENG International Conference on Artificial Intelligence and Applications, Hong Kong, March 21–23, 2007, pp. 83–88.

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- Persson, A., Grimm, H. and Ng, A. (2006)** On-line instrumentation for simulation-based optimization. Proceedings of the 2006 Winter Simulation Conference, Monterey, California, December 3–6, 2006, pp. 304–311.
- Persson, A., Grimm, H. and Ng, A., Karlsson, T., Ekberg, J., Falk, S. and Stablum, P. (2006)** Simulation-based multi-objective optimization of a real-world operation scheduling problem. Proceedings of the 2006 Winter Simulation Conference, Monterey, California, 3–6 December 2006, pp. 1757–1764.
- Persson, A., Grimm, H. and Ng, A. (2006)** Simulation-based optimisation using global search and neural network metamodels. Proceedings of the 20th annual European Simulation and Modelling Conference, Toulouse, France, October 23–25, 2006, pp. 182–186.
- Persson, A., Grimm, H. and Ng, A. (2006)** Simulation-based optimisation using local search and neural network metamodels. Proceedings of the 10th IASTED International Conference on Artificial Intelligence and Soft Computing, Mallorca, Spain, August 28–30, 2006, pp. 178–183.
- Lundell, B., Persson, A. and Lings, B. (2007)** Learning through practical involvement in the OSS ecosystem: experiences from a Masters assignment. Proceedings of the Third International Conference on Open Source Systems, Limerick, Ireland, June 11–14, 2007, pp. 289–294.
- Lundell, B., Lings, B., Persson, A. and Mattsson, A. (2006)** UML model interchange in heterogeneous tool environments: An analysis of adoptions of XMI 2. Proceedings of ACM/IEEE 9th International Conference on Model Driven Engineering Languages and Systems, Genova, Italy, October 1–6, 2006, pp. 619–630.
- Persson, A., Gustavsson, H., Lings, B., Lundell, B., Mattsson, A. and Ärlig, U. (2005)** OSS tools in a heterogeneous environment for embedded systems modeling: An analysis of adoptions of XMI. Proceedings of Open Source Application Spaces: Fifth Workshop on Open Source Software Engineering. St Louis, USA, May 17–21, 2005. pp. 39–42.
- Persson, A., Lings, B., Lundell, B., Mattsson, A. and Ärlig, U. (2005)** Communication, coordination and control in distributed development: an OSS case study. Proceedings of the First International Conference on Open Source Systems, Genova, Italy, 11–15 July 2005, pp. 88–92.
- Persson, A., Gustavsson, H., Lings, B., Lundell, B., Mattsson, A. and Ärlig, U. (2005)** Adopting open source development tools in a commercial production environment: Are we locked in? Proceedings of the CAiSE Workshops, Porto, Portugal, 2005, pp. 427–438.



## Research projects

To date I have had a leading role in 23 research projects with a total budget responsibility of over 186 million SEK. All the research projects in which I have been involved have been undertaken in collaboration with external partners, from both the private and public sector as well as from other academic institutions, nationally and internationally. The table below outline the projects in which I have had a leading role.

<i>Name of project</i>	<i>Period</i>	<i>Budget<sup>2</sup> and financier</i>	<i>Description</i>	<i>External partner(s)</i>
Virtual Factories with Knowledge-Driven Optimization (co-project leadership with prof. Amos Ng)	2018-2026	100,000,000 SEK Knowledge Foundation	Research profile within virtual engineering.	AB Volvo, Volvo Cars, Scania, ABB, IKEA Industry, Flexlink, Arla
MOSIM	2018-2021	2,800,000 SEK Vinnova	Optimization of human-robot collaboration	AB Volvo (project coordinator), Scania, FCC, IPS, Virtual Manufacturing
The Virtual Factory	2018-2020	4,000,000 SEK Knowledge Foundation	Industrial education within virtual engineering.	AB Volvo, Volvo Cars, IDC West Sweden
AutoQualM	2018-2020	100,000 SEK	Automated quality control in casting processes.	RISE, GIMIC, SICK, Ankarsrum, Nyströms Pressgjuteri, Tenhults Pressgjuteri, Mattsson Metal.
VISION	2018-2020	5,000,000 SEK Vinnova	Automated production quality inspections using machine learning.	AB Volvo, Volvo Cars, IDC West Sweden, Jonsac AB, Jönköping University, Swerea IVF.
OMAR	2018-2020	8,000,000 SEK Vinnova	Research collaboration and arena for production engineering development.	Lund University, Jönköping University, Borås University, Halmstad University, University West, SLU, Kristianstad University

<sup>2</sup> The amount of money specifies my budget responsibility.

Test Bed For Digital Waste Collection	2018-2019	1,000,000 SEK Vinnova	Test bed development.	AÖS
Virtual Factory	2018-2019	1,000,000 SEK	Industrial education within virtual engineering.	IDC West Sweden
TWIN	2017 – 2019	8,000,000 SEK Knowledge Foundation	Production optimization based on digital twins.	Leax AB, Goodtech Solutions AB, Projektengagemang AB
Virtual water & waste competence II	2017-2019	657,000 SEK Vinnova	Decision-support systems for maintenance of water pumps and water pipes.	Vakin AB (project coordinator), Adopticum
Mini-ÅVC	2017 – 2018	680,000 SEK Vinnova	Optimized solutions for collection of waste.	AÖS
SIM2020 AK3	2016 - 2018	11,300,000 SEK Tillväxtverket	Industrial decision support based on simulation and optimization.	Volvo Cars, Volvo GTO, AÖS
Autonomous Refuse Trucks	2016 – 2017	874,000 SEK Vinnova	Future truck concepts with integrated optimization systems.	AB Volvo, Norba Gesink, AÖS
Virtual water & waste competence	2016 - 2017	380,000 SEK Vinnova	Optimization of maintenance of water pumps and water pipes.	Vakin AB (project coordinator), Glesbygdsmedicinskt centrum
DYNAMITE	2015-2016	1,600,000 SEK Vinnova	Decision-support systems for operator support.	Chalmers (project coordinator), Scania CV, CEJN AB, Penny AB, KTH
Uppdragsforskning AÖS	2015	100,000 SEK AÖS	Optimization of vehicle fleets.	AÖS
Young Operator 2020	2014 – 2017	17,000,000 SEK Knowledge Foundation	Operator support systems using real-time optimizations.	Volvo Cars AB, VGTO AB, Daloc AB, Swegon AB, Vici Industrier AB.
ICECAP	2014 - 2016	1,700,000 SEK Vinnova	Industrial collaboration platform.	University of Jönköping (project coordinator),

				University of Malmö, University West, University of Borås, University of Halmstad, SLU
CARENA	2013 - 2015	1,700,000 SEK Vinnova	Research collaboration and improved effects of research results.	University of Jönköping (project coordinator), University of Lund, University West, University of Borås, University of Halmstad, SLU
Uppdragsforskning Noticia	2012	100,000 SEK Noticia	Sensor-based optimization of garbage containers.	Noticia AB
Smart Optimization of Logistics	2011 – 2014	7,700,000 SEK Knowledge Foundation	Optimization algorithms for complex logistics problems.	Volvo Technology AB, GKN Aerospace, ONCOlog AB
WeShare2012	2010 – 2013	9,300,000 SEK Tillväxtverket	Simulation and optimization of production and logistics.	Avfallshantering Östra Skaraborg, Mimer AB
Engineering for youth	2009– 2010	350,000 SEK Alfastiftelsen	Technical experiments that create an interest for technology.	Local elementary schools

## Supervision of PhD Students

To date I have supervised 14 PhD students, of which eight as main supervisor (*huvudhandledare*), according to the table below.

<i>Name of student</i>	<i>Supervisor position</i>	<i>Graduation</i>
Aitor Iriondo Pascual	Main supervisor	PhD expected 2023
Niklas Land	Main supervisor	PhD expected 2023
Henrik Smedberg	Assistant supervisor	PhD expected 2023
Yu Liu	Main supervisor	PhD expected 2021
Enrique Ruiz	Main supervisor	PhD expected 2020
Patrik Gustavsson	Main supervisor	PhD expected 2020

Oscar Danielsson	Main supervisor	PhD expected 2020
Ingemar Karlsson	Primary supervisor	PhD, 2018
Jacob Bernedixen	Primary supervisor	PhD, 2018
Carina Larsson	Assistant supervisor	Licentiate, 2017
Stefan Ericson	Main supervisor	PhD, 2017
Veronica Fornlöf	Main supervisor	Licentiate, 2016
Florian Siegmund	Assistant supervisor	PhD, 2016
Tehseen Aslam	Primary supervisor	PhD, 2013

## Additional scientific assignments and qualifications

- Expert leader on virtual production development in the national strategic innovation program Produktion2030 (since 2015)
- Member of the Research and Innovation Council of Produktion2030 (since 2018)
- Head of Research for the industrial Innovation Arena ASSAR (since 2015)
- Pedagogical qualification: Accomplished Teaching Lecturer (9% of the university staff has reached this qualification level).
- Member of Steering Committee for the Research Environment INFINIT at the University of Skövde
- Member of the Steering Committee for AB Volvo's Preferred Academic Partner Program at the University of Skövde
- Member of the Steering Committee for PhD Program in Informatics at the University of Skövde (since 2015)
- Member of the Management Committee for Industrial Research School at the University of Skövde (since 2015)
- Member of the board of the University of Skövde
- Editorial Board member: of The European Multidisciplinary Society for Modelling and Simulation (since 2013)
- Associate Editor of Journal of Manufacturing Systems (since 2014)
- Program committee member of Winter Simulation Conference, logistics track (since 2016)
- Management with staff responsibility: Deputy head and vice deputy head for Engineering Division (2011-2012).
- Six Sigma Black belt certification