SUNE LAUTH GADEGAARD

Operations Research Specialist | Transformative Educator

@ sgadegaard@econ.au.dk 📞 +45-28553272 📍 Baldersvej 1, Stilling, Denmark
in sunegadegaard SuneGadegaard G sunegadegaard
🌐 au.dk/sgadegaard@econ.au.dk 🆔 0000-0001-8989-6015

STRENGTHS

Optimization | Programming | Modelling | Teaching | Supervision | Mathematics

IT SKILLS

C++ | C | VBA | LaTeX | OPL | Python

Windows | Linux Ubuntu | OS X

LANGUAGES

Danish: Native

English: Full Professional Proficiency

AFFILIATION

CORE
Center for Research in Energy
ECONOMICS AND MARKETS

ABOUT ME

I am an associate professor who takes pride in presenting difficult and technical topics in a comprehensible and enlightening way. I love solving difficult problems and enjoy employing state-of-the-art theory in a practical setting.

EXPERIENCE

Associate Professor | Aarhus University

📅 05-2020 – Now 📍 Aarhus V, Denmark

- Department of Economics and Business Economics

Assistant Professor | Aarhus University

📅 02-2017 – 05-2020 📍 Aarhus V, Denmark

- Department of Economics and Business Economics

Research Assistant | Aarhus University

📅 06-2016 – 02-2017 📍 Aarhus V, Denmark

- Department of Economics and Business Economics

EDUCATION

PhD in Operations Research | Aarhus University

📅 02-2013 – 06-2016 📍 Aarhus V, Denmark

- Supervisors: Lars Relund Nielsen and Andreas Klose

Cand.scient.oecon | Aarhus University

📅 08-2010 – 02-2013 📍 Aarhus C, Denmark

- Mathematics-economics, with specialization in Operations Research
- Department of Mathematics, Science and technology, Aarhus University

BSc in mathematics | Aarhus University

📅 08-2007 – 06-2010 📍 Aarhus C, Denmark

- Pure mathematics
- Department of Mathematics, Science and technology, Aarhus University

CURRENT RESEARCH INTERESTS

My main research interests lie within quantitative research methods and in particular in *prescriptive analytics*. That is, quantitative methods aiming at improving decision making.

The fields I primarily work in include integer programming, mathematical modelling, multi-criteria optimization, vehicle routing, and facility location. In addition, more specialized and practice-oriented subjects such as group-forming and workforce scheduling are also topics I have studied.

RESEARCH LEADERSHIP

Jakob Geertsen Kristensen

📅 | September 2025–September 2028

- "Generalizing Risk-Sensitive Markov Decision Problems to Multiple Objectives"
- Role: Co supervisor

Mark Lyngesen

📅 | September 2024–September 2026

- "Multi objective combinatorial optimization with decoupled subproblems"
- Role: Main supervisor

Jesper Bang Mikkelsen

📅 | September 2021–September 2024

- "Fleet optimization for the mixed fleet green vehicle routing problem"
- Role: Main supervisor

Nicolas Joseph Forget

📅 | September 2019–September 2022

- "Solution algorithms for multi-objective linear integer programming models""
- Role: Co-supervisor

WORKS IN PROGRESS

A Generalized Set Partitioning Model for MinMax Vehicle Routing

- Together with Jens Lysgaard
- Under review at European Journal of Operational Research

Modelling a group forming problem arising in Danish schools as a lexicographic optimisation problem

- Intended outlet: Decision Science or Journal of the Operational Research Society

The impact of green zones on optimal route plans and fleet utilization

- Together with Jesper Bang Mikkelsen and Jens Lysgaard
- Intended outlet: Omega: The International Journal of Management Science

Rules for ruling: How the use of O.R. might have ruled out the Swedish coalition government

- Together with Anders Thorstenson
- Intended outlet: to be decided

PUBLICATIONS

A Branch-and-Cut Algorithm for the Mixed Fleet Green Vehicle Routing Problem | European Journal of Operational Research | doi | ○

📅 | November 2025

- Jesper Bang Mikkelsen, S.L. Gadegaard, and Jens Lysgaard

Generator Sets for the Minkowski Sum Problem | European Journal of Oprational Research | doi | ○

📅 June 2025

- Mark Lyngesen, S.L. Gadegaard, Lars Relund Nielsen
- Under review at European Journal of Oprational Research (second round)

Introduktion til Modellering inden for Prescriptive Analytics | Department of Economics and Business Economics, Aahus University | doi | ○

📅 | Februrary 2023

- S. L. Gadegaard
- Textbook for the course "Modellering inden for Prescriptive Analytics"

Branch-and-bound and objective branching with three or more objectives | Computers & Operations Research | doi | ○

📅 | December 2022

- Nicolas Forget, S. L. Gadegaard, Lars Relund Nielsen, Kathrin Klamroth, and Anthony Przybylski

---

Warm-starting lower bound set computations for branch-and-bound algorithms for multi objective integer linear programs | European Journal of Operational Research | doi | ○

📅 | Februrary 2022

- Nicolas Forget, S. L. Gadegaard, and Lars Relund Nielsen

A symmetry-free polynomial formulation of the Capacitated Vehicle Routing Problem | Discrete applied mathematics | doi

📅 | June 2021

- S. L.h Gadegaard and Jens Lysgaard

Bi-objective branch-and-cut algorithms based on LP relaxation and bound sets | INFORMS Journal on Computing | doi | ○

📅 | June 2019

- S. L. Gadegaard, Lars Relund Nielsen, and Matthias Ehrgott
- Finalist for the *2022 MCDM Junior Researcher Best Paper Award*

An improved cut–and–solve algorithm for the single source capacitated facility location problem | EURO Journal on Computational Optimization | doi | ⬡

📅 | March 2018

- S. L. Gadegaard, Andreas Klose, and Lars Relund Nielsen

A bi–objective approach to discrete cost–bottleneck location problems | Annals of Operations Research | doi | ⬡

📅 | November 2016

- S. L. Gadegaard, Andreas Klose, and Lars Relund Nielsen

Discrete location problems - Theory, Algorithms, and extensions to multiple criteria | Department of Economics and Business Economics, Aarhus University | 🌐

📅 | June 2016

- S. L. Gadegaard

Integrating cut-and-solve and semi-Lagrangean based dual ascent for the single-source capacitated facility location problem | optimization-online.org | 🌐

📅 | April 2016

- S. L. Gadegaard

FORMAL TEACHING DEVELOPMENT

Course on Online and Blended Learning | Centre for Educational Development at AU

📍 | 2022-2023

Master's and PhD Supervision for Professors and Associate Professors at BSS | Centre for Educational Development at AU

📍 | 2021–2022

Teaching Training Program for assistant professors and post.docs | AU Educational Development Network

📍 | 2017

Introduktion til planlægning, præsentationsteknik og undervisning | Center for Undervisning og Læring Aarhus BSS

📍 | 2015

TEACHING

I give teaching, and the planning and development thereof, high priority in my daily work. I have developed the literature for several courses as well as electronic teaching material in order to increase student learning. Below is a list of courses I have taught:

Modelling for Operations Management | 🔵 | 🔵

📅 | 2025   📍 |Department of Economics and Business Economics

- Focuses on equipping the student with the skills and knowledge to use mathematical modelling and optimization to solve business related decision problems. English version of the course "Modellering indenfor Prescriptive Analytics".

1 [2.5] 5
Evaluation

Large scale optimization | 🔵

📅 | 2022–present   📍 | Department of Mathematics

- Focuses on mathematical optimisation problems, which are of a size that qualifies as large scale. In this course, *large scale* refers to mathematical models that are so large that conventional solution methods are not sufficient.

1 [4.1] 5
Evaluation

Modellering indenfor Prescriptive Analytics | 🔵 | 🔵

📅 | 2019–2024   📍 |Department of Economics and Business Economics

- Focuses on equipping the student with the skills and knowledge to use mathematical modelling and optimization to solve business related decision problems.

1 [4.8] 5
Evaluation

Optimisation for Prescriptive Analytics | 🔵

📅 | 2020–2021   📍 | Department of Economics and Business Economics

- Focuses on both exact and heuristic solution procedures for optimization problems arising within business economics. The course is part of the master in Operations and Supply Chain Analytics.

1 [3.7] 5
Evaluation

Operations Management | 🔵

📅 | 2017–2021   📍 | Department of Economics and Business Economics

- Focuses on equipping the student with a broad insight into and understanding of the firm, especially with a focus on solving the tasks related to operations.

1 [4.1] 5
Evaluation

Quantitative modelling within transportation and distribution | 🔵

📅 | 2016–2018   📍 | Department of Economics and Business Economics

- Focus was on optimization models and their use when planning transportation and distribution networks.

1 [4.6] 5
Evaluation

Topics in Data Analysis | 🔵

📅 | 2016   📍 | Department of Mathematics

- I taught the part of the course focusing on large scale optimization. Topics in this part included simplex algorithms, column generation for LP and IP, Lagrangean relaxation, and Benders decomposition.
- The course was not evaluated

Modeling and Solving Discrete Optimization Problems w/i Logistics |

📅 | 2015   📍 | Department of Mathematics

- This summer university course focused on implications of modelling choices when solving integer programming problems. The cases in the course was based on examples from different problems in logistics.

1 **4.6** 5
Evaluation

SUPERVISION

I have supervised internship reports, project reports, bachelor's theses, and master's theses. Usually I have bi-weekly meetings with my theses students. During the project, I use a digital infrastructure where the students can upload material before the meetings. Before each meeting, the students are required to produce a structured agenda. I have also supervised 4 (Nicolas Joseph Forget, Jesper Bang Mikkelsen, Mark Lyngesen, Jakob Geertsen Kristensen) PhD students.

1 **4.9** 5
Evaluation

Average evaluation over relevant statistics

Supervision experience

- PhD theses : 4 (Nicolas Joseph Forget, Jesper Bang Mikkelsen, Mark Lyngesen, Jakob Geertsen Kristensen)
- Masters' theses students : 61
- Bachelors' theses students : 39
- Company internships : >20

Prices won by my thesis-students

- Oliver Østergaard Madsen has received "Handelsungdommens Uddannelseslegat" for excellent bachelor's theses
- Anne Katrine Tinggaard has received "Vissing fondens energipris" for excellent master's theses on energy supply with a focus on the green transition.

ACADEMIC SERVICE

Departmental service

2024-present	Member of working group focusing on increasing collaborations with Danish high schools
2023-present	Program coordinator for the Operations and Supply Shain Analytics cand.merc program
2022-present	Member of the Local Liaison Committee (LSU) at the Department of Economics and Business Economics
2021-present	Co-organiser of the "Operations and Supply Chain day" at the Department of Economics and Business Economics
2021-2023	Contact person for the LMS user group at the Department of Economics and Business Economics.
2018-2022	Deputy chairman of the departmental forum at the Department of Economics and Business Economics.
2022	Member of the review group for the Operations Management course at the HA study.
2021	Member of working group focusing on means to increase employee recognition in the workplace at the Department of economics and business economics.
2020	Coordinator for the CORAL research cluster
2018-2019	Member of the logistics section's internal review board for the Cand.Merc.Log. study program.

Referee duty

Since 2024	International Transactions in Operational Research
Since 2023	Mathematical Methods of Operations Research
Since 2021	RAIRO - Operations Research
Since 2019	Annals of Operations Research
Since 2018	Computers & Operations Research
	→ *Outstanding reviewer since 2017*
Since 2018	INFORMS journal on Computing
Since 2017	IISE Transactions
Since 2015	European Journal of Operational Research
	→ *Outstanding reviewer since 2017*

COURSES

I focus on continuous development of my personal skills and competences. This is to a large extent achieved by taking different courses, in person or online, which will challenge my status quo. The following is a list of some of the courses I have taken:

2024	*Universiteternes kursus i uddannelsesledelse* at AEU (Administrativ Efteruddannelse af Universitetsansatte)
2023	*Kursus i uddannelsesledelse* at Center for Educational Learning, Aarhus University
2023	*Introduction to Predictive Analytics in Python* and *Supply Chain Analytics in Python* at Datacamp.com
2022-2023	*Course on Online and Blended Learning* at Center for Education Learning, Aarhus University
2022	*Introduction to Python*, *Intermediate Python*, and *Introduction to Data Science in Python* at Datacamp.com
2021-2022	*Master's and PhD Supervision for Professors and Associate Professors at BSS* at Center for Education Learning, Aarhus University
2017	*Teaching Training Program for assistant professors and post.docs* (Adjunktpædagogikum) at Center for Education Learning, Aarhus University
2015	*Introduktion til planlægning, præsentationsteknik og undervisning* at Center for Education Learning, Aarhus University

PERSONAL INFORMATION

I am married to Irene Lauth Gadegaard since 2011. Together we have two daughters Selma (from 2012) and Ida (from 2016).