Kerem AKARTUNALI
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PERSONAL SUMMARY

Professional Experience

University of Strathclyde Business School,
Dept. of Management Science

Professor	Jun. 2020 – present
Reader	May 2018 – May 2020
Senior Lecturer	Jun. 2014 – Apr. 2018
John Anderson Research Lecturer in Optimization	Feb. 2010 – May 2014

Duties include:

- Conduct and publication of high-quality research, and generation of research income.
- Design, development and delivery of teaching to postgraduate and undergraduate students.
- Supervision of postgraduate research students and postdoctoral research fellows.

University of São Paulo,
Institute of Mathematics and Computer Science (ICMC-USP)
Visiting Professor Aug. 2017 – present

- Research collaboration with various research groups of ICMC; delivery of seminars.

The University of Melbourne, Oct.2007 – Dec.2009
Dept. of Mathematics and Statistics
Postdoctoral Research Fellow

- Under supervision of Prof. Natashia Boland and Prof. Mark Wallace.
- Research project on large-scale scheduling problems in transportation, particularly integrated airline problems, using integer optimization techniques.
- In collaboration with Monash University and Constraint Technologies International Inc. (industrial partner).

Education

University of Wisconsin-Madison
Ph.D., Industrial Engineering, Aug. 2007
M.Sc., Industrial Engineering, Dec. 2003

Middle East Technical University
B.Sc., Industrial Engineering, Jun. 2002

University of Paderborn
Exchange, Wirthschaftsingeniurwesen (in German), 2000-2001.

RESEARCH & KNOWLEDGE EXCHANGE

Brief Synopsis

My broad research area is operations research, with a focus on integer, robust and network optimization, and their applications in practice. Since my PhD thesis, I have been working on production planning and lot-sizing problems, as well as a number of integer, robust and network optimization applications, in particular large-scale transportation (such as airline scheduling/planning and vessel crew scheduling), health applications (such as radiation treatment planning and nurse rostering) and energy applications (such as offshore windfarm installation). I have also been increasingly involved in data-driven decision making and analytics applications.

Awards & Recognition

Major Grants:

- Innovate UK Future Flight Challenge (Phase 3) Grant (£10 million, led by AGS Airports, Strathclyde portion £694,578, co-I) for the project "Care & Equity – Logistics UAS Scotland Phase 3 (CAELUS 2)", with 12 large and small industry partners, 2022.
- Innovate UK Future Flight Challenge (Phase 2) Grant (£1.3 million, led by AGS Airports, Strathclyde portion £362,986, co-I) for the project "Care & Equity – Logistics UAS Scotland (CAELUS)", with 12 large and small industry partners, 2020.
- Horizon 2020 Innovative Training Networks (ITN) Grant (€3.9 million, Strathclyde portion €622,817, co-I) for the project "UTOPIAE: Uncertainty Treatment and OPtimisation In Aerospace Engineering", with 11 institutions from 6 countries, 2016.
- EPSRC First Grant (£98,315, PI) for the project "Multi-Item Production Planning: Theory, Computation and Practice", EP/L000911/1, 2013.
- TIC Low Carbon Power and Energy Grant (£220,221, co-I) for the cross-faculty project "Analysis and Optimisation of Offshore Wind Farm Installation Logistics", TIC/LCPE/FI-03, with Sandy Day (PI), Matthew Revie and Evangelos Boulougouris, 2013.

Student Awards:

- Glory Alozie, Winner, Doctoral Award (The OR Society), 2022.
- Scott Dickie, Runner up, May Hicks Award (The OR Society), 2020.

Other Grants & Recognition:

- TIC Low Carbon Power and Energy Grant (£49,507, co-I) for the cross-faculty project "Predictive Analytics and Maintenance for Network Assets", TCI/LCPE/N-11, with Bruce Stephen (PI), Annalisa Ricardi and Blair Brown, 2022.
- US AFOSR (Air Force Office of Scientific Research) Grant (US$40,000, PI) for the project "Multi-Level Robust Optimization: Theory, Algorithms and Practice", FA9550-18-1-7003, with Euan Barlow (co-I), 2018.
- Data Lab MOOC/Online Learning Development Grant (£50,000, co-I) for the development of the cross-faculty online course "The Power of Data Science in the Health and Care Sector", with John Levine (PI) and Marilyn Lennon, and Janette Hughes (project manager), 2017.
- Data Lab Innovation Centre Grant (£56,380, with additional £20,000 provided from GCC, co-I) for a project on data-driven workforce optimization of home carers, in

collaboration with external partners Cordia and Glasgow City Council (GCC), with Annalisa Ricardi (PI, Mechanical & Aerospace Engineering) and Janette Hughes (project manager, Institute for Future Cities), 2017.

- Capita PhD Studentship Grant for the project "A Mixed-Methods Approach for Clinical Triage to Improve Patient's Journey and System Performance", with Alec Morton, 2017.
- US AFOSR (Air Force Office of Scientific Research) Grant (US$30,000, PI) for the project "Data Mining in Social Networks", FA9550-17-1-0105, with Ashwin Arulselvan (co-I), 2016.
- US AFOSR (Air Force Office of Scientific Research) Grant (US$30,000, co-I) for the project "Node Deletion and Edge Deletion Problems in Networks", FA9550-17-1-0029, with Ashwin Arulselvan (PI), 2016.
- Data Lab Innovation Centre Grant (£54,349, co-I) for a project on time-series based forecasting for revenue, in collaboration with industrial partner Syngro, with Matthew Revie (PI) and Euan Barlow (Management Science) and Marc Roper (CIS), 2016.
- Finalist, EURO Excellence in Practice Award, 2016 (TIC/LCPE/FI-03 project). (TIC LCPE also won "Multi-Party Collaboration Award" in Scottish KE Awards, 2016).
- US AFOSR (Air Force Office of Scientific Research) Grant (US$42,000, PI) for the project "Robust Vessel Crew Scheduling", FA9550-14-1-0203, with Dr. Robert van der Meer, 2014.
- Capita PhD Studentship Grant for the cross-faculty project "Network Science, Optimization and Data Fusion in a Smart City", with Prof. Des Higham (PI), 2014.
- Encompass Grant (£10,000, PI) for a preliminary analysis project with industrial partner Corporate Modelling, with Dr. Kevin Wilson, 2014.
- Scottish Funding Council (SFC) Innovation Voucher Scheme Grant (£5,000, PI) for a waste minimization project with industrial partner First Milk, 2013.
- 9 PhD Studentship Grants (each providing international fees and stipends for 3 years), with Prof. Tim Bedford / Dr. Robert Van Der Meer / Dr. John Levine (cross-faculty) / Prof. Alec Morton / Dr. Ashwin Arulselvan / Dr. Euan Barlow / Dr. Bin Liu, University of Strathclyde, 2013-2020.
- KTA Grant (£10,000, co-I) for the cross-faculty project "Materials Management for HSDU in NHS", with Prof. Umit Bititci (PI) and Dr. Robert Van Der Meer, 2011.
- EPSRC Doctoral Training Grant for the cross-faculty project "Multi-Objective Planning for Autonomous Control Systems", with Prof. Derek Long (PI), 2010.

Publications

Refereed Journal Publications:

(PhD students & postdocs are marked with *, who are normally set as first authors.)

34. B. Liu, **K. Akartunalı**, S. Dauzère-Pérès, S. Wu. Editorial: Special issue on collaborative production and maintenance in the environment of big data and industry 4.0. *International Journal of Production Research*, 61(23):8236-8237, 2023.

33. V.A.P.A. Devesse, **K. Akartunalı**, M.S. Arantes, C.F.M. Toledo. Linear Approximations to Improve Lower Bounds of a Physician Scheduling Problem in Emergency Rooms. *Journal of the Operational Research Society*, 74(3):888-904, 2023.

32. E.M. Silva*, G.M. Melega, **K. Akartunalı**, S. de Araujo. Formulations and Theoretical Analysis of the One-Dimensional Multi-Period Cutting Stock Problem with

Setup Cost. *European Journal of Operational Research*, 304(2):443-460, 2023.

31. **K. Akartunalı**, S. Dauzère-Pérès. Dynamic Lot Sizing with Stochastic Demand Timing. *European Journal of Operational Research*, 302(1):221-229, 2022.

30. A. Arulselvan, **K. Akartunalı**, W. van den Heuvel. Economic Lot-Sizing Problem with Remanufacturing Option: Complexity and Algorithms. *Optimization Letters*, 16:421-432, 2022.

29. G. Alozie*, A. Arulselvan, **K. Akartunalı**, E. Pasiliao. A Heuristic Approach for the Distance-Based Critical Node Detection Problem in Complex Networks. *Journal of the Operational Research Society*, 73(6):1347-1361, 2022.

28. G. Alozie*, A. Arulselvan, **K. Akartunalı**, E. Pasiliao. Efficient Methods for Distance-Based Critical Node Detection Problem in Complex Networks. *Computers & Operations Research*, 131:105254, 2021.

27. **K. Akartunalı,** M.O. dos Santos, R. Jans, S.A. de Araujo. Foreword: Special Issue on Recent Advances in Lot Sizing. *Pesquisa Operacional*, 41, 2021. doi: 10.1590/0101-7438.2021.041s1.0041s101

26. W.A. Oliveira, M.O. dos Santos, **K. Akartunalı**. Decomposition Based Heuristics for a Lot Sizing and Scheduling Problem on Multiple Heterogeneous Production Lines with Perishable Products. *Pesquisa Operacional*, 41, 2021. doi: 10.1590/0101-7438.2021.041s1.00240377

25. M. Polnik, A. Riccardi, **K. Akartunalı**. A Multistage Optimisation Algorithm for the Large Vehicle Routing Problem with Time Windows and Synchronised Visits. *Journal of the Operational Research Society*, 72(11):2396-2411, 2021.

24. Ö.N. Attila*, A. Agra, **K. Akartunalı**, A. Arulselvan. Robust Formulations for Economic Lot-Sizing Problem with Remanufacturing. *European Journal of Operational Research*, 288(2):496-510, 2021.

23. W.A. Oliveira, M.O. dos Santos, **K. Akartunalı**. MIP Approaches for a Lot Sizing and Scheduling Problem on Multiple Production Lines with Scarce Resources, Temporary Workstations, and Perishable Products. *Journal of the Operational Research Society*, 72(8): 1691-1706, 2021.

22. N. Banerjee*, A. Morton, **K. Akartunalı**. Passenger Demand Forecasting in Scheduled Transportation. *European Journal of Operational Research*, 286(3): 797-810, 2020.

21. S.A.B. Syed Ali*, M. Doostmohammadi*, **K. Akartunalı**, R. van der Meer. A Theoretical and Computational Analysis of Lot-Sizing in Remanufacturing with Separate Setups. *International Journal of Production Economics*, 203:276-285, 2018.

20. A. Leggate*, S. Sucu*, **K. Akartunalı**, R. van der Meer. Modelling Crew Scheduling in Off-Shore Supply Vessels. *Journal of the Operational Research Society*, 69(6):959-970, 2018.

19. M. Doostmohammadi*, **K. Akartunalı**. Valid Inequalities for Two-Period Relaxations of Big-Bucket Lot-Sizing Problems: Zero Setup Case. *European Journal of Operational Research*, 267(1):86-95, 2018.

18. E. Barlow*, D. Tezcaner Öztürk*, M. Revie, **K. Akartunalı**, S. Day, E. Boulougouris. A Mixed-Method Optimisation and Simulation Framework for Supporting Logistical Decisions during Offshore Wind Farm Installations. *European Journal of Operational Research*, 264(3):894-906, 2018.

17. **K. Akartunalı**, M. Laumanns, G.-W. Weber. Editorial: Making an Impact with

Optimization. *Optimization*, 66(12):2087-2088, 2017.

16. M. Paton*, **K. Akartunalı**, D.J. Higham. Centrality Analysis for Modified Lattices. *SIAM Journal on Matrix Analysis and Applications*, 38(3):1055–1073, 2017.

15. E. Rahimian*, **K. Akartunalı**, J. Levine. A Hybrid Integer and Constraint Programming Approach to Solve Nurse Rostering Problems. *Computers & Operations Research*, 82:83-94, 2017.

14. T. Wu, **K. Akartunalı**, R. Jans, Z. Liang. Progressive Selection Method for the Coupled Lot-Sizing and Cutting-Stock Problem. *INFORMS Journal on Computing*, 29(3):523–543, 2017.

13. E. Rahimian*, **K. Akartunalı**, J. Levine. A Hybrid Integer Programming and Variable Neighborhood Search Algorithm to Solve Nurse Rostering Problems. *European Journal of Operational Research*, 258(2):411-423, 2017.

12. **K. Akartunalı**, P. Knight. Network Models and Biproportional Apportionment for Fair Seat Allocations in the UK Elections. *Annals of Operations Research*, 253(1):1-19, 2017.

11. **K. Akartunalı**, I. Fragkos, A. J. Miller, T. Wu. Local Cuts and Two-Period Convex Hull Closures for Big-Bucket Lot-Sizing Problems. *INFORMS Journal on Computing*, 28(4):766-780, 2016.

10. E. Barlow*, D. Tezcaner Öztürk*, S. Day, E. Boulougouris, M. Revie, **K. Akartunalı**. Exploring the Impact of Innovative Developments to the Installation Process for an Offshore Wind Farm. *Ocean Engineering*, 109:623-634, 2015.

9. C.F.M.Toledo, M.S. Arantes, P.M.Franca, M.Y.B. Hossomi, **K. Akartunalı**. A Relax-and-Fix with Fix-and-Optimize Heuristic Applied to the Multi-Level Lot-Sizing Problems. *Journal of Heuristics*, 21(5):687-717, 2015.

8. **K. Akartunalı**, V. Mak-Hau, T. Tran. A Unified Mixed-Integer Programming Model for Simultaneous Fluence Weight and Aperture Optimization in VMAT, Tomotherapy, and CyberKnife. *Computers & Operations Research*, 56:134-150, 2015.

7. T. Wu, **K. Akartunalı**, J. Song, L. Shi. Mixed Integer Programming in Production Planning with Backlogging and Setup Carryover: Modeling and Algorithms. *Discrete Event Dynamic Systems*, 23(2):211-239, 2013.

6. **K. Akartunalı**, N. Boland, I. Evans, M. Wallace, H. Waterer. Airline Planning Benchmark Problems Part II: Passenger Groups, Utility and Demand Allocation. *Computers & Operations Research*, 40(3):793-804, 2013.

5. **K. Akartunalı**, N. Boland, I. Evans, M. Wallace, H. Waterer. Airline Planning Benchmark Problems Part I: Characterising Networks and Demand using Limited Data. *Computers & Operations Research*, 40(3):775-792, 2013.

4. **K. Akartunalı**, A. J. Miller. A Computational Comparison of Lower Bounds for Big Bucket Production Planning Problems. *Computational Optimization and Applications*, 53(3):729-753, 2012.

3. T. Wu, L. Shi, J. Geunes, **K. Akartunalı**. On the Equivalence of Strong Formulations for Capacitated Multi-level Lot Sizing Problems with Setup Times. *Journal of Global Optimization*, 53(4):615-639, 2012.

2. T. Wu, L. Shi, J. Geunes, **K. Akartunalı**. An Optimization Framework for Solving Capacitated Multi-level Lot-sizing Problems with Backlogging. *European Journal of Operational Research*, 214(2):428-441, 2011.

1. **K. Akartunalı**, A. J. Miller. A Heuristic Approach to Big Bucket Multi-Level

Production Planning Problems. *European Journal of Operational Research*, 193(2):396-411, 2009.

Selected Publications in Refereed Conference Proceedings and Book Chapters:
(PhD students & postdocs are marked with *, who are normally set as first authors.)

6. G. Alozie*, **K. Akartunalı**, A. Arulselvan. Modelling and Exact Solution Approaches for the Distance-Based Critical Node and Edge Detection Problems. Forthcoming, In: Hamid F. (eds), *Optimization Essential: Theory, Tools and Applications*, Springer, 2024.
5. A. Riccardi, E. Minisci, **K. Akartunalı**, C. Greco, N. Rutledge, A. Kershaw, A. Hashim. Introduction to Optimisation. In: Vasile M. (eds), *Optimization Under Uncertainty with Applications to Aerospace Engineering*. Springer, pp. 223-268, 2021. https://doi.org/10.1007/978-3-030-60166-9_7
4. Ö.N. Attila*, A. Agra, **K. Akartunalı**, A. Arulselvan. A Decomposition Algorithm for Robust Lot Sizing Problem with Remanufacturing Option. In: Gervasi O. et al. (eds), *International Conference on Computational Science and Its Applications (ICCSA 2017), Trieste, Italy. Lecture Notes in Computer Science (LNCS)*, Vol. 10405, Springer, pp.684-695, 2017.
3. **K. Akartunalı**, A. Arulselvan. Economic Lot-Sizing Problem with Remanufacturing Option: Complexity and Algorithms. In: Pardalos P., Conca P., Giuffrida G., Nicosia G. (eds), *Machine Learning, Optimization, and Big Data: Second International Workshop, MOD 2016, Volterra, Italy. Lecture Notes in Computer Science* (LNCS), Vol. 10122, Springer, pp. 132-143, 2016.
2. E. Barlow*, D. Tezcaner Öztürk*, S. Day, E. Boulougouris, M. Revie, **K. Akartunalı**. An Assessment of Vessel Characteristics for the Installation of Offshore Wind Farms. Proceedings of the *International Conference on Marine Technology (ICMT)*, 2014.
1. E. Barlow*, D. Tezcaner Öztürk*, S. Day, E. Boulougouris, M. Revie, **K. Akartunalı**. A Support Tool for Assessing the Risks of Heavy Lift Vessel Logistics in the Installation of Offshore Wind Farms. Proceedings of the *Marine Heavy Transport & Lift IV*, 2014.

Publications in Progress:

1. Ö.N. Attila*, A. Agra, **K. Akartunalı**, A. Arulselvan. Robust Two-level Multi-Component Lot Sizing Problem with Remanufacturing. Under revision, Nov. 2023.
2. W.A. Oliveira, M.O. Santos, **K. Akartunalı**. Lagrangian-Based Heuristics for Production Planning and Scheduling in the Food Industry. Under revision, Jan. 2024.
3. S. Kandula, D. Roy, **K. Akartunalı**. A Machine Learning Approach to Solve the E-commerce Box-Sizing Problem. Under revision, Feb. 2024.

Publications in Preparation/Technical Reports:

1. R. Kuipers, **K. Akartunalı**, E. Barlow. Investigating Potential Savings from Resource Sharing between the Installation and Maintenance of Offshore Windfarms. Working paper.
2. S. Sucu*, **K. Akartunalı**, R. van der Meer. A Heuristic Approach for Supply Vessel Crew Scheduling with Time Windows. Working paper.
3. N. Banerjee*, **K. Akartunalı**, A. Morton. Forecasting Passenger Demand for

Intercity Bus Transportation in India. Working paper.

4. N. Banerjee*, **K. Akartunalı**, A. Morton. Micro Forecasting Passenger Demand for Intercity Bus Transportation in India. Working paper.
5. Ö.N. Attila*, A. Arulselvan, **K. Akartunalı**. An Exact Algorithm for the Two-Level Multi-Component Lot Sizing Problem with Remanufacturing. Working paper.
6. E. Barlow*, D. Tezcaner Öztürk*, M. Revie, **K. Akartunalı**, S. Day, E. Boulougouris. On Using Simulation to Model the Installation Process Logistics for an Offshore Wind Farm. Technical report, University of Strathclyde, 2017.

Keynotes, Invited Talks, and Lectures

30. "*Production Planning under Uncertainty: Robust and Stochastic Approaches*", Invited Seminar, Erasmus School of Economics, Erasmus University Rotterdam, Netherlands, Jun. 2023.

29. "*Production Planning under Uncertainty: Two Applications*", Invited Seminar, ORSTAT Seminar Series, Faculty of Economics and Business, KU Leuven, Belgium, Jun. 2023.

28. "*Robust and Stochastic Approaches for Lot-Sizing under Uncertainty*", Invited Seminar, GERAD Seminar Series, HEC Montréal, Canada, Apr. 2023.

27. "*Production Planning under Uncertainty: Robust and Stochastic Approaches*", Invited Seminar, Department of Electronics, Information and Bioengineering (DEIB), Politecnico di Milano, Italy, Mar. 2023.

26. "*OR in Action: Two Applications of Maritime Logistics*", Invited Seminar, OPERA Seminar Series, Faculty of Economics and Business, University of Groningen, Netherlands, Nov. 2019.

25. "*Production Planning: A Review and Robustness*", Invited Seminar, Laboratory of Computing, Modelling and Optimization of the Systems (LIMOS), Ecole des Mines de Saint-Etienne, Gardanne, France, Nov. 2018.

24. "*Relaxations and Robust Reformulations for Production Planning*", Invited Seminar, School of Business, Universidad Adolfo Ibañez, Santiago, Chile, Aug. 2018.

23. "*Decomposition and Reformulations for Robust Lot-Sizing with Remanufacturing and Backlogging*", Invited Seminar, Engineering Faculty, The University of Campinas (UNICAMP), Limeira, Brazil, Aug. 2018.

22. "*OR in Maritime Logistics*", Invited speaker at 7th STOR-i Annual Conference, Lancaster University, UK, Jan. 2018.

21. "*Production Planning: From Decompositions to Robust Reformulations*", Invited Seminar, Dept. of Management Science, Lancaster University, UK, Jan. 2018.

20. "*Vessel Crew Scheduling for Offshore Supply Vessels*", Invited Seminar, Dept. of Applied Mathematics, São Paulo State University (UNESP), São José do Rio Preto, Brazil, Nov. 2017.

19. "*A Review of Lot-Sizing: Heuristics, Reformulations and Decompositions*", Plenary talk at 18th Oficina Nacional de Problemas de Corte e Empacotamento, Planejamento e Programação de Produção e Correlatos (ONPCE – National Workshop on Problems of Cutting and Packing, Planning and Production Scheduling), Federal University of São Paulo (UNIFESP), São José dos Campos, Brazil, Nov. 2017.

18. "*Production Planning: Challenges and Opportunities*", Invited Seminar, Dept. of Production Engineering, Federal University of São Carlos (UFSCar), São Carlos, Brazil, Nov. 2017.

17. "*Staff Scheduling from Health to Maritime*", Invited Seminar, Institute of

Mathematics and Computer Science, University of São Paulo, São Carlos, Brazil, Oct. 2017.

16. "*Data Analytics: Opportunities and Challenges*", Sandpit talk, WISE-Strathclyde Partnership Workshop, University of Waterloo, Canada, Oct. 2017.

15. "*Production Planning: Review and Future Outlook*", Invited Seminar, GERAD Seminar Series, Université de Montréal, Canada, Oct. 2017.

14. "*From Blue Sky Research to Big Data: External Perspectives to Making Knowledge Work*", with Colin Suckling, Keynote session at 17th EURAM Conference, Glasgow, UK, Jun. 2017.

13. "*A Review of Nurse Rostering Problems and Solution Methods*", Invited Seminar, School of Nursing, Anschutz Medical Campus, University of Colorado-Denver, USA, Nov. 2016.

12. "*Operational Research and Practical Applications for the Food & Drink Industry*", Invited Seminar, Food and Drink Industry Advisory Group (IAG), Zero Waste Scotland, Ivan Wood and Sons, Fife, UK, Jun. 2016.

11. "*Radiation Treatment Planning Optimization: Challenges and Opportunities*", Invited Seminar, Dept. of Mechanical Engineering, University of Lisbon, Portugal, Jul. 2015.

10. "*Optimization in Maritime Transportation: Two Applications*", Invited Seminar, CIRRELT Seminar Series, Université de Montréal, Canada, Jun. 2014.

9. "*Optimization for Treatment Planning In New Generation Radiation Equipment*", Invited Seminar, Dept. of Mathematics, University of Colorado-Denver, USA, Oct. 2013.

8. "*Radiation Treatment Planning Optimization Using Volumetric-Modulated Arc Therapy (VMAT)*", Invited Seminar, Dept. of Management Science and Innovation, University College London, UK, Aug. 2013.

7. "*Volumetric Modulated Arc Therapy (VMAT): Treatment Planning Optimization*", Invited Seminar, Health Management Science Group, Business School, Imperial College, London, UK, Feb. 2012.

6. "*Integer Programming: Two Applications*", Invited seminar in ERGO Seminar Series, School of Mathematics, University of Edinburgh, UK, Sep. 2011.

5. "*Integrating Airline Problems: Opportunities and Challenges*", Invited seminar, University of Reykjavik, Iceland, Jun. 2010.

4. "*Airline Schedule Design: From Modeling Demand to Fleet Assignment Problem*", Invited seminar, IMB, Université de Bordeaux I, France, Sept. 2009.

3. "*Two-period Convex Hull Closures for Big Bucket Lot-sizing Problems*", Invited seminar, IMB, Université de Bordeaux I, France, Sept. 2009.

2. "*Column Generation: A Brief Overview*", Guest lecture, Computer Science and Software Engineering Department, The University of Melbourne, Australia, Oct. 2008.

1. "*Two-period Relaxations on Big Bucket Production Planning Problems*", Invited seminar, Melbourne Chapter of ASOR, Australia, Jun. 2008.

Conference Presentations

26. "*Robust Models for Remanufacturing with Multiple Quality Classes*", Invited talk, International Workshop on Lot Sizing, Aug. 2023, Cork, Ireland.

25. "*One-dimensional Multi-period Cutting Stock Problem with Setup Cost: A Theoretical Analysis*", Invited talk, International Workshop on Lot Sizing, Aug. 2022, Oslo, Norway.

25. "*A Min-Max Approach for the Robust Two-level Lot Sizing Problem with Multiple Components and Remanufacturing*", Invited talk, International Workshop on Lot Sizing, Aug. 2019, Paris, France.
24. "*Lot Sizing with Stochastic Demand Timing*", Invited session, EURO XXX, Jun. 2019, Dublin, Ireland.
23. "*Reformulations for Robust Lot-Sizing Problem with Remanufacturing Option and Backlogging*", Invited talk, International Workshop on Lot Sizing, Aug. 2018, Ubatuba, Brazil.
22. "*Two-Period Relaxations for Big-Bucket Lot-Sizing: Polyhedra and Algorithms*", ISMP 2018, Jul. 2018, Bordeaux, France.
21. "*A Computational Analysis of Reformulations for Robust Lot-Sizing with Remanufacturing*", Invited session, EURO/ALIO International Conference 2018 on Applied Combinatorial Optimization, Jun. 2018, Bologna, Italy.
20. "*A Branch-and-Cut Algorithm Using Two-Period Relaxations for Big-Bucket Lot-Sizing*", Invited session, EURO XXVIII, Jul. 2016, Poznan, Poland, and INFORMS Annual Meeting, Nov. 2016, Nashville, TN, USA.
19. "*A Novel Framework of Simulation and Optimisation for Offshore Wind Farm Installation Logistics at SSE and SPR*", EURO Excellence in Practice Award session, EURO XXVIII, Jul. 2016, Poznan, Poland.
18. "*A Theoretical Study of Two-Period Relaxations for Lot-Sizing Problems with Big-Bucket Capacities*", Invited talk, International Workshop on Lot Sizing, Aug. 2015, Montreal, Canada.
17. "*Treatment Planning Optimization for VMAT, Tomotherapy, and Cyberknife*", Invited session, EURO XXVII, Jul. 2015, Glasgow, UK.
16. "*Vessel Crew Scheduling: Formulations and Heuristics*", Invited session, INFORMS Annual Meeting, Nov. 2014, San Francisco, CA, USA.
15. "*Network Models and Biproportional Apportionment for Fair Seat Allocation in the UK Elections*", Invited session, INFORMS Annual Meeting, Oct. 2013, Minneapolis, MN, USA.
14. "*Extending the Two-Period Convex Hull Closures for Lot-Sizing: Strengthening, Lifting and Computation*", Invited session, EURO XXVI, Jul. 2013, Rome, Italy.
13. "*Two-Period Convex Hull Closures for Big Bucket Lotsizing Problems*", Invited talk, International Workshop on Lot Sizing, Aug. 2012, Rotterdam, Netherlands.
12. "*Radiation Treatment Planning Optimization for Volumetric Arc Therapy (VMAT): Optimization and Heuristics*", Invited session, ISMP 2012, Aug. 2012, Berlin, Germany.
11. "*Radiation Treatment Planning Optimization for Volumetric Arc Therapy (VMAT)*", Invited session, INFORMS Annual Meeting, Nov. 2011, Charlotte, NC, USA.
10. "*Radiation Treatment Planning Using Volumetric Arc Therapy (VMAT)*", Young OR 17, Apr. 2011, Nottingham, UK.
9. "*Airline Schedule Design: Network Design Optimization and Heuristics Ideas*", Invited session, EURO XXIV, July 2010, Lisbon, Portugal.
8. "*Two-period Convex Hull Closures for Big Bucket Lot-sizing Problems*", Invited session, ISMP 2009, August 2009, Chicago, IL.
7. "*2-period Convex Hull Closures for Big Bucket Production Planning Problems*", National Conference of ASOR 2007, Melbourne, VIC.

6. "*Improving Bounds on Big Bucket Production Planning Problems*", SCALE conference 2007, Gainesville, FL.
5. "*Using Strong Formulation to Derive Bounds on Big Bucket Production Planning Problems*", Invited session, INFORMS Annual Meeting 2006, Pittsburgh, PA.
4. "*Computational Comparisons for Big Bucket Production Planning Problems*", Invited session, ISMP 2006, Rio de Janeiro, Brazil.
3. "*Strong Formulation Heuristics for Big Bucket Production Planning Problems*", INFORMS Annual Meeting 2005, San Francisco, CA.
2. "*Heuristics for Big Bucket Production Planning Problems*", Invited session, INFORMS Annual Meeting 2004, Denver, CO.
1. "*Strong Formulations and Separation for Multi-level Lot-sizing Problems*", EURO/INFORMS 2003, Istanbul, Turkey and ISMP 2003, Copenhagen, Denmark.

Postdoctoral Supervision

- Euan Barlow and Diclehan Tezcaner Öztürk, co-supervision with Prof. Day, Dr. Revie and Dr. Boulougouris (TIC FI03), Nov. 2013 – Jan. 2015.
- Mahdi Doostmohammadi, sole supervisor (EP/L000911/1), Mar. 2014 – Apr. 2015.

PhD Supervision

Completed/Viva (PhD Defense) Completed:

- Martin Paton, "Centrality Analysis for Modified Lattices", 2nd supervisor (1st supervisor Des Higham, cross-faculty project), completed in Oct. 2022. Currently Analyst at NHS.
- Glory Alozie, "Node and Edge Deletion Problems in Networks", 2nd supervisor (1st supervisor Ashwin Arulselvan), completed in Oct. 2021. Currently Postdoctoral Researcher in Biomedical Engineering at University of Strathclyde.
- Nilabhra Banerjee, "A Study of Passenger Demand in Intercity Bus Service Industry in India and Application of Scientific Techniques in Forecasting the Passenger Demand", 2nd supervisor (1st supervisor Alec Morton), Viva (PhD Defense) completed in Oct. 2020.
- Öykü Naz Attila, "Robust Production Planning for Remanufacturing: Theory and Practice", 1st supervisor (2nd supervisor Ashwin Arulselvan), completed in Mar. 2020. Currently Postdoctoral Researcher at CIRRELT, Université du Québec à Montréal, Canada.
- Junchi Tan, "Performance-Centred Maintenance Problem: Modelling and Heuristics", 2nd supervisor (1st supervisor Tim Bedford), completed in May 2019. Currently Data Analyst at Intouch Games Ltd, UK.
- Erfan Rahimian, "CP/IP Approaches for Nurse Rostering", 1st supervisor (2nd supervisor John Levine, cross-faculty project), completed in Mar. 2019. Currently Lead Software Engineer at Morgan Stanley, UK.
- Seda Sucu, "Solving Crew Scheduling Problem in Offshore Supply Vessels: Heuristics and Decomposition Methods", 1st supervisor (2nd supervisor Robert Van der Meer), completed in Jan. 2018. Currently Postdoctoral Researcher at Portsmouth University, UK.
- Sharifah Aishah Binti Syed Ali, "Formulations and Valid Inequalities for Economic Lot Sizing Problems with Remanufacturing", 1st supervisor (2nd supervisor Robert Van der Meer), completed in Jul. 2016. Currently Senior Lecturer at National Defense University, Malaysia.

- Alex Leggate, “A Vessel Crew Scheduling Problem: Formulations and Solution Methods”, 2nd supervisor (1st supervisor Robert Van der Meer), completed in Jun. 2016. Currently Transportation Analyst at Systra, UK.

In Progress:

- Eduardo Machado Silva: Visiting PhD student (1st supervisor Silvio de Araujo, UNESP, Brazil), fully funded by CAPES, project on “Integrated Cutting Stock and Lot Sizing”, Dec. 2019 – Sep. 2020. Continuing his PhD at UNESP.
- Andreas Neofytou: project on “Integrated production and maintenance planning in the age of big data”, 1st supervisor (2nd supervisor Bin Liu), Oct. 2021 – present.
- Charles Emeka Onyi: project on "Data-Driven Robust Optimization for Installation of Offshore Windfarms", 1st supervisor (2nd supervisor Mahdi Doostmohammadi), Oct. 2022 – present.
- Amin Jawanmard: project on “Resilient Supply Chains in Disaster Management”, 1st supervisor (2nd supervisor Ashwin Arulselvan), Oct. 2023 – present.

PhD Examinations

- Xiyuan Ma, Business School, University of Edinburgh, Mar. 2023.
- Sarah Katharina Frisch, Fakultät für Technische Wissenschaften, University of Klagenfurt (Austria), Dec. 2021.
- Franco Quezada, LIP6 (Laboratoire d’Informatique de Paris 6), Sorbonne University (France), Oct. 2021.
- Francis Garuba, Management School, Lancaster University, Jun. 2020.
- Jose Cabezas, School of Mathematics, University of Edinburgh, Feb. 2018.
- Valdemar Abrão Pedro Anastácio Devesse (PhD Qualification Exam), Institute of Mathematics and Computer Science, University of São Paulo (Brazil), Jan. 2018.
- Taposhri Ganguly, Management Science (Strathclyde), Jan. 2014.
- Samaneh Balali, Management Science (Strathclyde), Jan. 2013.
- Luke Robert Mason, School of Information Technology, Deakin University (Australia), Jun. 2012.

MSc and Honours (Final UG year) Supervision

- *MSc in Data Analytics:* Ibrahem Awad, Sally Buchanan, Shu Shan Lee and Vinina Sunny (2022), Soumyajeet Das, Liam Humphreys and Elijah Reid (2021), Harrison Ghatoray and Stuart Napier (2020), Dimitrios Chasiotis, Savvas Christodoulidis and Scott Dickie (2019), Karen Osborne and Suzanne Beith (2018).
- *MSc in Business Analysis and Consulting:* Andrew Edmiston, Silviya Kircheva, Jing Hsuan Lu and Thong Trinh (2021), Desislava Angelova and Shu Rong (2020), Ioannis Orfanos and Chandrava Sinha (2019), Georgios Chatzipetkos and Timothy Kleinschmidt (2018), Konstantinos Gavriilidis (2016), Viswanathan Subramaniam (2015), Peter Lueckert and Olivier Samson (2014), Linn Soma, Graham Quinn, Claudia Rocha, Alice Costache and Yu Meng (2013), Bin Wan (2012), Aamer Nawaz (2011).
- *MSc in Operational Research:* Robert Kyle, Adam Rennie and Nichola Campbell (2017), Glory Alozie, Spyridon Bonikos, Dean Farrell and Zoe Goodwin (2015), Sally Thompson and Cheryl Mundie (2014), Evgeny Zotov (2013), David Martin-Corral, Konstantinos Gasparis and Abid Rasul (2012), Wenfeng Zhang (2011).
- *MSc in Supply Chain Management:* Kirsty Franks (2012-2014), Sinan Nabil Al Khatib (Abu Dhabi - 2012), David Mwangose (2012), Avinash Haorongbam (2011).

- *Honours in Management Science:* Rebecca Robertson, Kristiyan Nikolov, Suman Iqbal, Iona Fletcher and Lauren Thomson (2017), Cristina Cowan (2016), Sonja Rohmer (2014), Amy Smith (2013), Emma Pyper, Toby Sandison and Zhixing Dong (2012), Erin Boyle (2011).

Professional Membership

- Mathematical Optimization Society, Member, 2003-present.
- INFORMS, Member, 2003-present.
- The OR Society, Member, 2010-present.

TEACHING

Brief Synopsis

I have been extensively involved with teaching activities at various levels from undergraduate to Masters since I was a PhD student. I have been exposed to course development as early as the last year of my PhD studies, and I have received extensive teaching training. Due to my departmental and faculty-level administration and leadership roles, I have also been extensively involved in curriculum design. I have used my research in a number of teaching activities including online learning, and have employed a range of state-of-the-art technologies in various classes. Due to my current faculty role as Digital Education Director, my involvement in online learning has substantially increased, from content development in MOOCs and online CPD to course design and management of graduate apprenticeships.

Teaching Experience

University of Strathclyde **Since 2010**

MOOC/CPD:

- The Power of Data in Health and Social Care
  - Class design and content development with Dr Marilyn Lennon (course leader) and Dr John Levine for the 3-week introductory MOOC on FutureLearn platform, online support and teaching (run in Jun.&Nov. 2018, Jan. 2019, Apr. 2020, Mar. 2021.)
- CS270 The Power of Data Science in Health and Social Care
  - Class design and content development with Dr Marilyn Lennon and Dr John Levine for the 6-week online CPD course aimed at health and social care practitioners, online support and teaching (run in Feb.-Mar. 2019, Jul.-Aug. 2021, Jul.-Aug.2022).

Masters level:

MBA / Hunter Centre for Entrepreneurship

- MG811 / Z1973 Project and Process Management
  - Autumn 2020, Autumn 2021, Autumn 2022, Autumn 2023: Co-developed content for the online setting including activities, co-taught with Dr. Paton.

MSc Data Analytics

- MS984 Data Analytics in Practice
  - 2020-21, 2021-22, Autumn 2022, 2023-24: Arranged external clients for real-world data analytics/consultancy projects, designed and developed workshops for students' professional development, arranged guest speakers from various external organisations.

- MS987 Optimization for Analytics
    - Spring 2018: Designed a completely new class involving optimization modeling and algorithms, designed tutorial sessions specifically aimed at computational experience, taught the class solely.
    - Spring 2019, Spring 2020, Spring 2021, Spring 2022, Spring 2024: Taught the class solely, redesign & redevelopment of content.

MSc Business Analysis and Consulting, MSc Operational Research

- MS979 Analytics for Big Data/MS980 Business Analytics
    - Spring 2016, Spring 2017: Co-taught the cross-disciplinary class with Dr. Dmitri Roussinov (Computer and Information Sciences) and Prof. Chris Robertson (Mathematics & Statistics), developed new material for first-time running, redesigned material for improvement over first running.
    - Spring 2018, Spring 2019: Co-taught the cross-disciplinary class with Prof. Chris Robertson (Mathematics & Statistics) and Dr. Viktor Dorfler, developed new material due to redesign to accommodate new MSc cohorts.
- MS930/MS935 Becoming an Effective Business Analyst
    - Spring 2017: Arranged external clients for real-world business analysis/consultancy projects, supervised and assessed the student progress in their 3-week work placements, designed and developed workshops for students' professional development including a day with senior managers from various external organizations.
- MS934 Advanced Operational Research Methods – Deterministic.
    - Spring 2010: Co-taught the class with Dr. Illes.
    - Spring 2011: Newly designed and developed the class due to changes in the masters programme.
    - Spring 2012, Spring 2013, Spring 2014, Spring 2015: Reflecting upon student feedback obtained in the previous year, redeveloped the material to encompass experiential learning.
- MS934D Advanced Operational Research Methods (Distance Learning).
    - Spring 2012, Spring 2016, Spring 2018, Spring 2021: Continuous redevelopment due to heavy software-based nature of the class, online teaching and support.
- MS932 Operational Research Methods.
    - Spring 2010: Co-taught the class with Dr. Illes.

Other Masters level classes

- LOG Logistics Network Optimization and Simulation (SBS Abu Dhabi campus).
    - Summer 2011: Designed and developed the material from scratch.
- MS970 Case Studies in Supply Chain Management.
    - 2010-2011, 2011-2012, 2012-2013: Liaised with external clients from industry in order to co-develop a number of case studies; designed and developed case studies in airline scheduling and production planning.

Honours (Final UG year) level:

- BF404 Issues and Trends in Business and Management
    - Spring 2018: Taught a part of the business school class covering "Business

Analysis & Technology", developed new material for first-time running.

- MS420 Management Science 4.
  - Spring 2012, Spring 2013, Spring 2014: Designed/redesigned the class with Prof. Belton based solely on experiential-learning techniques; liaised with external industrial clients to create projects; organized a panel discussion with external consultants; built learning contracts with students.
- MS400 Management Science General Paper.
  - Autumn 2010: Co-taught the class with Prof. Belton; built and maintained learning contracts with students for a semester-long project.

Undergraduate level:

- OB307 Project Management
  - Autumn 2021, Autumn 2022, Autumn 2023: Co-developed content and co-taught the Graduate and Degree Apprenticeship 3rd Year class with Dr. Mijoh Gbededo and Kira Parker.
- MS310 Supply Chain Management:
  - Autumn 2010: Designed and developed the material from scratch.
  - Autumn 2011, Autumn 2012, Autumn 2013: Redeveloped part of the material after reflection upon the student feedback from the previous year.
- MS209 Business Analysis and Supporting Technologies
  - Spring 2016: Co-taught the class with Dr. Euan Barlow and Prof. Val Belton.
- 48311 Modeling and Managing Uncertainty in Operations.
  - Spring 2010: Co-taught the class with Prof. Bedford.
- MS111 Fundamentals of Business Analysis.
  - 2011-2012, 2012-2013,2013-2014: Redesigned part of the class and co-taught with Dr. Marshall, Ms. Gould and Dr. Shafti.

The University of Melbourne **Semester 1, 2008**

- Honours (Final UG year) class "Integer Programming".
  - Designed and developed the material with Dr. Gan; used 'Access Grid' to teach the class interactively to students at The University of Newcastle, Australia.

University of Wisconsin-Madison **2004-2006**

- Undergraduate class ISyE 323 "Operations Research – Deterministic Modeling".
  - Autumn 2006: Designed and developed the class from scratch based on a new textbook; managed two teaching assistants for tutorials.
  - Autumn 2004, Autumn 2005: Conducted lab sessions.

Professional Development

- Completed "Teaching, Learning & Assessment in Higher Education" course successfully, 5-7 Sept. 2012.
- Successfully completed 40 masters level credits under the "Professional Development Framework" offered by CAPLE.
  - "Leadership and Management in Higher Education" Module, 2010.
  - "Academic Writing" Module, 2011.
- Completed the highly-selective "Research Leaders for Tomorrow" program, 2011.
- Attended and successfully completed formal teaching training programs supplied by the Engineering Faculty, University of Wisconsin-Madison.

- New Educators Orientation (NEO), 2-day training, Aug. 2004.
- Teaching Improvement Program (TIP), 1-day training, Aug. 2005, Aug. 2006.

ADMINISTRATION & SERVICE

Service Experience

Internal – Departmental Level:

- Deputy Head of Department, Aug. 2019 – Jul. 2020.
  - Acting Head of Department for 2 months.
  - Supporting Head of Department in various strategic decisions, including but not limited to staff recruitment, promotions and development, finances, and workload allocations.
  - Line management of nine teaching and academic staff up to Grade 8.
- Director of PGT (Postgraduate Taught), Aug. 2018 – Jul. 2020.
  - Strategic management of the departmental PGT portfolio (7 in-campus and 2 online MSc programs); oversight of and support to MSc program directors.
- MSc Program Director/Co-Director, Jan. 2013 – Jul. 2018, Aug. 2020 – Jul. 2021.
  - Day-to-day academic management and monitoring of MSc Business Analysis and Consulting, MSc Operational Research and/or MSc Data Analytics in-campus (100+ students) and online courses (80+ students), curriculum development and redesign, chairing exam boards and advisory boards.
  - Led a cross-faculty course design (MSc Data Analytics) with Departments of Mathematics & Statistics and Computer & Information Systems, Sep. 2017.
- Postgraduate (Taught) Admissions, Oct. 2012 – Sep. 2014.
  - Admission decisions on MSc applications (full- and part-time), recruitment at local universities and business school/university fairs.
- Postgraduate Research Director, Oct. 2010 – Oct. 2013.
  - Academic advice to and admission of PhD, DBA and MPhil applicants and monitoring student progress, organization of summer and winter research workshops, support to academic staff in scholarship applications, attendance at faculty review panels.

Internal – Faculty and University Level:

- Strathclyde Information Strategy Committee, Member, Aug. 2020 – Jul. 2021.
  - Reporting directly to the University Executive Team, responsible for all matters of corporate information strategy.
- SBS Faculty, Director of Digital Education, Aug. 2017 – Jul. 2020.
  - Strategic and tactical management of online and blended courses, including MOOCs, Degree/Graduate Apprenticeships, online MSc and MBA courses.
- Strathclyde Learning Analytics Board (LAB), Member, Aug. 2017 – Jul. 2020.
- Strathclyde Online Learning (SOL) Committee, Member, Aug. 2017 – Jul. 2020.
- SBS Faculty Representative, Engineering Board of Study, 2014-present.
- SBS Faculty PhD scholarships panel member, 2012, 2015, 2016.
- Strathclyde Research Enhancement Group (REG), Member, 2011-2013.

External – Research/Policy:

- Isaac Newton Institute for Mathematical Sciences, Management Committee Member,

Jan. 2023- Dec. 2025.

- EPSRC Peer Review College, Full Member, 2018-present.
    - Associate Member, 2017-2018.
    - Regular reviews of grant proposals, participation in prioritization panels.
- EPSRC Mathematical Sciences Prioritization Panel, Member, Jun. 2017, Nov. 2018, Nov. 2020.
    - Ranking of grant proposals for funding decisions.
- OR Society Research Panel member, 2016-present.
- EURO Working Group on Lot Sizing Board member, 2016-present.
- SAS Scotland Academic Board, 2017-2020.
- OR Group of Scotland (regional branch of OR Society), Chair, 2012-2016.

External – Editorial/Reviewer:

- Associate editor, *INFOR: Information Systems and Operational Research*, 2023 – present.
- Editorial board member, *Computational Optimization and Applications*, 2018 – present.
- Guest editor for special issue "Collaborative production and maintenance in the environment of big data and industry 4.0", *International Journal of Production Research*, 2021 – 2023.
- External examiner, MSc Business Analytics, University of Edinburgh Business School, 2021 – present.
- External examiner, MSc Operational Research, School of Mathematics, University of Edinburgh, 2018 – 2022.
- Guest editor for special issue "Recent Advances in Lot Sizing", *Pesquisa Operacional*, 2019 – 2021.
- Guest editor for EURO conference special issue "Making an Impact with Optimization", *Optimization*, 2017.
- Editorial board member, *Heliyon* (Elsevier), 2015-2019.
- Refereed/reviewed for
  (Up to date list at https://www.webofscience.com/wos/author/record/184577)
    - *4OR*
    - *Annals of Operations Research*
    - *Computational Optimization and Applications*
    - *Computers & Operations Research*
    - *European Journal of Operational Research*
    - *IEEE Transactions on Automation Science and Engineering*
    - *IISE Transactions*
    - *INFORMS Journal on Computing*
    - *International Journal of Production Economics*
    - *International Journal of Production Research*
    - *Journal of Operational Research Society*
    - *Management Science*
    - *Mathematical Programming*
    - *Mathematics of Operations Research*
    - *Naval Research Logistics*
    - *Omega (Best Reviewer Award, 2020)*

- *Operations Research*
- *Production and Operations Management*

External – Conference Organization:

- Steering committee member of the annual International Workshop on Lot Sizing, Aug. 2016 – present.
- Invited session chair, Mathematics of OR, 25-26 Apr. 2019, Birmingham, UK.
- Program committee member, MOD 2017 - The Third International Conference on Machine Learning, Optimization and Big Data, Tuscany, Italy, 14-17 Sep. 2017.
- Conference chair, 8th IWLS, 23-25 Aug. 2017, Glasgow, UK.
- Conference co-chair, 17th EURAM, 21-24 Jun. 2017, Glasgow, UK.
- Invited session chair, Mathematics of OR, 20-21 Apr. 2017, Birmingham, UK.
- Organization committee member, 27th EURO, 12-15 Jul. 2015, Glasgow, UK.
- Organization committee member, OR54, 4-6 Sep. 2012, Edinburgh, UK.
- Optimization stream organizer, Young OR 17, 5-7 Apr. 2011, Nottingham, UK.
- Organization committee member, Conference on Transportation Scheduling and Disruption Handling, 17-19 Sep. 2009, Prato, Italy.