

Christoffer Olling Back

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Researcher in computer science with significant industry and teaching experience. Focus on AI/ML and data mining with application to processes, workflows and enterprise resource planning systems. Interdisciplinary background with demonstrable ability to collaborate and excel in multiple disciplines – in recent years, concentrating exclusively on computer science and mathematics.


EDUCATION

PhD Computer Science	UNIVERSITY OF COPENHAGEN	<i>2017 - 2021</i>
Dissertation: <i>Hybrid Process Mining: Inference & Evaluation Across Imperative & Declarative Approaches</i>		
Coursework: Adv. Topics in Machine Learning: Reinforcement and Online Learning, Aspects of Adv. Analytics, Deep Learning, Graph-powered Machine Learning, Machine Learning with Probabilistic Graphical Models, Mathematical Logic		
Coursework in Mathematics	ROSKILDE UNIVERSITY	<i>2016 - 2017</i>
Coursework: Probabilistic Topic Modeling, Differential Equations, Real Analysis		
Master of Science in Artificial Intelligence	UNIVERSITY OF EDINBURGH	<i>2010 - 2011</i>
Thesis: <i>Modeling Strategic Negotiation Behavior</i>		
Coursework: Applied Machine Learning, Automated Planning, Economics for Postgrads, Java Programming, Multiagent Systems, Text Technologies (NLP), etc.		
Bachelor of Applied Arts in Glass	ROYAL DANISH ACADEMY	<i>2008 - 2012</i>
Coursework: Glassworking, Product Design, Entrepreneurship, etc.		
Bachelor of Arts in Psychology	LEWIS & CLARK COLLEGE	<i>2004 - 2008</i>
Comp. Sci.: Artificial Intelligence, Computer Science 1 & 2, Human-Computer Interaction		
Psychology: Abnormal-, Cross-cultural-, Developmental-, and Physiological Psychology, Cognition, Psychology Methodology, Statistics		

AWARDS & SCHOLARSHIPS

Nordea-fonden Scholarship	NORDEA, UNIVERSITY OF EDINBURGH	<i>2010</i>
Dean's Honor List	LEWIS & CLARK COLLEGE	<i>2007</i>

FUNDING

GS19-1 Grant 	INNOVATION FUND DENMARK	<i>2021</i>
Proposal co-author. Digital Research Centre Denmark, AI and Blockchains for Complex Business Processes work package  . DKK 3.8M.		

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher	UNIVERSITY OF COPENHAGEN	<i>2021 - 2024</i>
Developing methods for automated extraction of structured process logs and event knowledge graphs from large databases in Enterprise Resource Planning systems.		
Staff Machine Learning Engineer	SERVICENOW	<i>2021 - 2024</i>
Leader of a 3-person team developing machine learning and data mining tools for analyzing software activity in Enterprise Resource Planning systems.		
Data Scientist	GEKKOBRAIN A/S	<i>2019 - 2021</i>
First non-founding employee in startup. Developed bespoke process mining and machine learning tools for analyzing data from Enterprise Resource Planning systems. These were pivotal to the company's acquisition in 2021 by the Fortune 500 multinational, ServiceNow.		
Sole Proprietor	OLLING GLASS	<i>2008 - 2016</i>
Developed an innovative digital fabrication technology for shaping glass components which are assembled into consumer products, in particular for decorative lighting. Designed, produced and marketed a series of handmade products sold at about 20 brick-and-mortar retailers, as well as online, in fine art galleries, and fashion shows.		


TEACHING

Guest Lecturer (DigiLawyer)	UNIVERSITY OF COPENHAGEN	<i>2020</i>
Teaching computer science and Python programming to MSc students in Law department.		
Teaching Assistant (Data Science in Medicine)	UNIVERSITY OF EDINBURGH	<i>2019</i>
Teaching statistics and data science to students enrolled in the MBChB Medicine program.		
Tutor (BSc Computer Science)	UNIVERSITY OF COPENHAGEN	<i>2018 - 2020</i>
One-on-one tutoring for 3 students enrolled in BSc Computer Science program.		
<ul style="list-style-type: none">• Algorithms and Data Structures• Computer Systems• Data Science• Mathematical Analysis and Probability Theory• Modeling and Analysis of Data• Linear Algebra in Computer Science• Programming and Problem Solving (F #)• Software Development (C #)		
Assistant Teacher (Software Engineering)	UNIVERSITY OF COPENHAGEN	<i>2018 - 2019</i>
Teaching, supervising and evaluating MSc Computer Science students in various software engineering methodologies, including: OML diagramming; requirements elicitation; waterfall, Scrum, test-driven development, and other frameworks.		

SUPERVISION

Erasmus+ Tutor	UNIVERSITY OF COPENHAGEN	<i>2023 - 2024</i>
Host and tutor for a total of 5 visiting undergraduate and graduate students through the Erasmus+ Traineeship program, with stays ranging from 1-5 months.		
Co-supervisor	UNIVERSITY OF COPENHAGEN	<i>2019</i>
Thesis co-supervisor for 2 MSc Computer Science students.		

SERVICE AND DISSEMINATION

Program Committee	DEC2H	<i>2023 - 2024</i>
DEC2H Workshop in conjunction with BPM Conference		
Peer Reviewer	EAAI	<i>2023</i>
Journal on Engineering Applications of Artificial Intelligence		
Peer Reviewer	JoDS	<i>2020</i>
Journal on Data Semantics		
Peer Reviewer	CAISE	<i>2019</i>
International Conference on Advanced Information Systems Engineering		
Peer Reviewer	FORTE	<i>2019</i>
Int. Conference on Formal Techniques for Distributed Objects, Components, and Systems		
Guest Expert 	UNIVERSITY OF EDINBURGH, COURSERA	<i>2019</i>
Guest expert on process mining at the Data Science in Stratified Healthcare and Precision Medicine course.		



SKILLS

Programming/IT	Arduino, C#, C, Docker, F#, GCode, Git, Java, JavaScript, Jenkins, Kubernetes, L ^A T _E X, Linux, Maven, OpenSCAD, Python, SQL/Relational DBMS, R, Weka
Mathematics	Calculus, Differential Equations, Information Theory, Linear Algebra, Logic, Probability Theory, Statistics & Bayesian Inference, Real Analysis

LANGUAGE PROFICIENCY (SELF-ASSESSED CEFRL LEVEL)

English	Native speaker (C2)	Norwegian	Independent (B)	Spanish	Basic (A)
Danish	Native speaker (C2)	Swedish	Independent (B)	Japanese	Basic (A)

PERSONAL REFERENCES

Tijs Slaats  (slaats@di.ku.dk)	UNIVERSITY OF COPENHAGEN
Associate Professor of Computer Science. PhD Supervisor, 2017-2021.	
Areti Manataki  (a.manataki@st-andrews.ac.uk)	UNIVERSITY OF ST. ANDREWS
Lecturer in Computer Science, University of St. Andrews. Honorary Fellow in Medical Informatics, The University of Edinburgh. Advisor and collaborator during stay abroad at the Usher Institute at The University of Edinburgh.	

- [1] **Back, C. O.** and Simonsen, J. G. 2024a. “Posets and Bounded Probabilities for Discovering Order-inducing Features in Event Knowledge Graphs”. In: in preparation.
- [2] Slaats, T., Debois, S., **Back, C. O.**, and Christfort, A. K. F. Mar. 2024. “Foundations and practice of binary process discovery”. In: *Information Systems* 121, p. 102339.
- [3] **Back, C. O.** and Simonsen, J. G. 2023. “Comparing Trace Similarity Metrics Across Logs and Evaluation Measures”. en. In: *Advanced Information Systems Engineering*. Vol. 13901. Cham: Springer Nature Switzerland, pp. 226–242.
- [4] **Back, C. O.**, Slaats, T., Hildebrandt, T. T., and Marquard, M. Aug. 2022. “DisCoveR: accurate and efficient discovery of declarative process models”. en. In: *International Journal on Software Tools for Technology Transfer* 24.4, pp. 563–587.
- [5] Slaats, T., Debois, S., and **Back, C. O.** 2021. “Weighing the Pros and Cons: Process Discovery with Negative Examples”. en. In: *Business Process Management*. Cham: Springer International Publishing, pp. 47–64.
- [6] **Back, C. O.**, Manataki, A., Papanastasiou, A., and Harrison, E. 2020a. “Stochastic Workflow Modeling in a Surgical Ward: Towards Simulating and Predicting Patient Flow”. In: *International Joint Conference on Biomedical Engineering Systems and Technologies*. Springer, pp. 565–591.
- [7] **Back, C. O.**, Manataki, A., and Harrison, E. Mar. 2020. “Mining patient flow patterns in a surgical ward”. In: *Proceedings of the 13th International Joint Conference on Biomedical Engineering Systems and Technologies*. Vol. 5. SciTePress, pp. 273–283.
- [8] **Back, C. O.**, Debois, S., and Slaats, T. June 2019. “Entropy as a Measure of Log Variability”. en. In: *Journal on Data Semantics* 8.2, pp. 129–156.
- [9] Nekrasaite, V., Parli, A. T., **Back, C. O.**, and Slaats, T. 2019b. “Discovering Responsibilities with Dynamic Condition Response Graphs”. en. In: *Advanced Information Systems Engineering*. Cham: Springer International Publishing, pp. 595–610.
- [10] **Back, C. O.**, Debois, S., and Slaats, T. 2018a. “Towards an Empirical Evaluation of Imperative and Declarative Process Mining”. en. In: *Advances in Conceptual Modeling*. Ed. by C. Woo, J. Lu, Z. Li, T. W. Ling, G. Li, and M. L. Lee. Cham: Springer International Publishing, pp. 191–198.
- [11] **Back, C. O.**, Debois, S., and Slaats, T. 2018b. “Towards an Entropy-Based Analysis of Log Variability”. en. In: *Business Process Management Workshops*. Cham: Springer International Publishing, pp. 53–70.