

XIXI LU

Assistant Professor @ Utrecht University
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ABOUT ME

Xixi Lu, born July 17th, 1989, in Wenzhou, China. Dutch nationality.

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EDUCATION

2018.09 - 2019.03	BKO / UTQ Obtained the basiskwalificatie onderwijs (BKO), also known as University Teaching Qualification (UTQ) in English.	Vrije University Amsterdam, Amsterdam
2013.10 - 2018.05	Ph.D. in Computer Science at the Department of Mathematics and Computer Science Thesis : <i>Using behavioral context in process mining: exploration, preprocessing and analysis of event data</i>	Eindhoven University of Technology (TU/e)
2011.09 - 2013.09	M.Sc. Business Information System (Cum Laude) Majoring in Computer Science, specializing in Process Mining Master thesis: <i>Artifact-centric log extraction and process discovery</i>	TU/e, Eindhoven
2008.09 – 2012.06	B.Sc. Computer Science Bachelor project: developed an Android mobile application for the university to familiarize new students with the campus and facilities	TU/e, Eindhoven
2009.09 - 2010.02	Minor Industrial Engineering , studied abroad	Tsinghua University, Beijing
2009.09 - 2011.06	Honors Program	TU/e, Eindhoven

EXPERIENCE - ACADEMIA

2020.04 - Present	Assistant Professor (tenure-track) at the Department of Information and Computing Sciences	Utrecht University, Utrecht
2019.01 - 2020.04	Postdoctoral researcher at the Department of Information and Computing Sciences	Utrecht University, Utrecht
2019.11	Visiting Researcher at the Faculty of Industrial Engineering & Management visiting Prof. Avigdor Gal	Technion - Israel Institute of Technology, Haifa, Israel
2019.04	Visiting Researcher at the Department of Computer Science visiting Prof.dr. Matthias Weidlich	Humboldt-Universität zu Berlin, Berlin, Germany

2018.05 - 2018.12	Postdoctoral researcher at the Department of Computer Science	Vrije University, Amsterdam
2018.09	Visiting Researcher at the Department of Computer Science visiting Prof.dr. Matthias Weidlich	Humboldt-Universität zu Berlin, Berlin
2013.10 - 2018.05	Ph.D. candidate at the Department of Mathematics and Computer Science Supervisor: Prof.dr.ir. Wil van der Aalst Daily supervisor: Dr. Dirk Fahland	Eindhoven University of Technology (TU/e)
2016.07	Visiting Researcher at École normale supérieure Paris-Saclay visiting dr. Stefen Haar	ENS Cachan, Paris
2015.11 - 2015.12	Visiting Researcher at Queensland University of Technology visiting Prof.dr. Arthur ter Hofstede	QUT, Brisbane
2009.09 - 2010.02	Student-assistant at TU/e, for course: <i>Logic and set theory</i>	TU/e, Eindhoven

TEACHING

2021.09 - on wards	Educational Committee - Bachelor Programs, Faculty of Science Utrecht In Dutch: GSNS - Onderwijs Committee	UU,
2020.09 - on wards	Educational Advisory Committee - Information Science Bachelor Program (INKU - OAC) Chairmain, since January 2022	UU, Utrecht
2022.04 - 2022.06	Master Course: Process Mining Role: Course coordinator, course designer, and responsible lecturer (100%)	UU, Utrecht
2021.11 - 2022.02	Bachelor Course: Applications of Machine Learning Role: Course coordinator and responsible lecturer (60%) Received teaching award	UU, Utrecht
2021.04 - 2021.06	Master Course: Process Mining Role: Course coordinator and responsible Lecturer (100%) Received teaching award	UU, Utrecht
2021.02 - 2021.04	Bachelor Course: Applications of Machine Learning Role: Course coordinator, course designer, and responsible lecturer (60%)	UU, Utrecht
2020.04 - 2020.06	Master Course: Process Mining Seminar Role: Co-lecturer, responsible for 4 lectures, co-designed the course	UU, Utrecht
2018.09 - 2019.01	BPM course Role: Guest Lecturer, tutor	VU Amsterdam
2016	BPMS course Role: Advisor	TU/e, Eindhoven
2014	BPI course Role: Advisor	TU/e, Eindhoven

SUPERVISION

PhD Students

2021.05 - Present	PhD student - Suhwan Lee Role: Co-promotor / Daily supervisor	UU, Utrecht
2018.05 - 2022.05	PhD student - Jelmer J. Koorn Role: Co-promotor / Daily supervisor	UU, Utrecht
2019.07 - 2019.12	PhD student - Junxiong (Frank) Gao Role : Advisor	RWTH Aachen

Master Students

2021.12 - current	Master student - Zoey E. Hulzebos Role: 1st-supervisor Title: <i>Predicting NovaSure treatment outcomes based on patient characteristics and treatment patterns</i>	UU, Utrecht
2021.10 - 2022.08	Master student - Olusanmi A. Hundogan Role: 1st-supervisor Title: <i>CREATED: The Generation of viable Counterfactual Sequences using an Evolutionary Algorithm for Event Data of Complex Processes</i>	UU, Utrecht
2021.10 - 2022.07	Master student - Jochem Veldman Role: 1st-supervisor Title: <i>Creating unseen anomalies: Generating process anomalies using a taxonomy of fraud characteristics for accurate detection</i>	UU, Utrecht
2021.10 - 2022.06	Master student - Hilde Jongeling Role: 1st-supervisor Title: <i>Identifying And Prioritizing Suitable RPA Candidates in ITSM Using Process Mining Techniques: Developing the PLOST Framework</i>	UU, Utrecht
2021.01 - 2021.06	Master student - Ruben Post Role: 2nd-supervisor Title: <i>Active Anomaly Detection in Process Data</i>	UU, Utrecht
2020.12 - 2021.07	Master student - Rose Mary Hulscher Role: 1st-supervisor Title: <i>HOW TO CAPTURE THE RELATIONSHIPS BETWEEN DATA? The DEK-G Methodology for designing an Enterprise Knowledge Graph</i>	UU, Utrecht
2020.06 - 2021.03	Master student - Mehrad Abdollahi Role: 1st-supervisor Title: <i>Hybrid Trace clustering in process mining</i>	UU, Utrecht
2020.04 - 2020.11	Master student - Bart Belleman Role: 1st Supervisor Title: <i>Using machine learning for detecting anomaly accesses to EHRs: a comparative analysis and case study</i>	UU, Utrecht
2019.05 - 2020.03	Master student - Hemalatha Kanakarajan Role: Daily-supervisor Title: <i>Data Science for Healthcare - Predicting Aggressive Behaviour in Intellectually challenged</i>	UU, Utrecht
2019.07 - 2020.03	Master student - Pratik Kushwaha Role: 2nd-supervisor Title: <i>Artifact Centric Dynamic Software Architecture Reconstruction</i>	UU, Utrecht

Bachelor Students and Other Projects

2021.02 - Present	Bachelor student - Martijn Jansen Role: 1nd-supervisor Title: <i>TBD</i>	UU, Utrecht
2020.11 - 2021.04	Bachelor student - Jasey Janssen Role: 1nd-supervisor Title: <i>Comparing textual preprocessing techniques for automatic classification of product review rating on Amazon</i>	UU, Utrecht
2020.08 - 2021.04	Bachelor student - Iris Tuhumena Role: 1nd-supervisor Title: <i>Studying Graph Based Approaches for Anonymizing Social Network Data - A Literature Study</i>	UU, Utrecht
2015.09 - 2016.07	Five Honor students in the Big Data Track Role: Supervisor title: <i>Measuring reader's impression in an online marking environment by analyzing clicking behavior</i>	TU/e, Eindhoven

TALKS, POSTERS, AND SEMINARS

2021.06	Invited talk at ICS Colloquium	Utrecht University, Utrecht (Online)
2020.10	Invited talk at ICPM 2020 Doctor Consortium	Padova, Italie (Online)
2019.11	Guest lecture at Technion - Israel Institute of Technology	Technion, Haifa, Israel
2019.11	Poster at Data Science Day	UU, Utrecht
2019.10	Poster at Commit2Data	NWO, Utrecht
2019.10	Invited talk at IPA research school	Wageningen
2017.09	Invited talk at Celonis	Munich, Germany
2016.07	Invited talk at Celonis	Munich, Germany
2015.10	Seminar at Queensland University of Technology (QUT)	QUT, Brisbane, Australia

HONORS and Grant Experiences

ICPM 2020 - **Best PhD thesis Award** (500 euro)

ERCIM Cor Baayen Young Researcher Award 2020 - Honorary mention

BPM 2020 - **Best reviewer**

BPM 2020 - **Best student paper (Jelmer Koorn)**

ZEUS workshop 2017 - Best presentation

Celonis 2017 - Best Process Mining Master Thesis

Travel grant (500 euro) for visiting 2nd European BPM Round Table, University Liechtenstein, 2014

PROFESSIONAL ACTIVITY

2022	PC member of international conferences: BPM, COOPIS, ICPM
2022	Workshop Organizer of ICPM Workshop EdbA 2022
2022	PC member of ICPM workshops 2022: SA4PM, RPM, EdbA, DQT-PM
2021	Workshop Chair of ICPM 2021
2021	PC member of ICPM workshop EdbA 2021
2021	PC member of international conferences: BPM (Foundation track), ICPM
2020	PC member of ICPM 2020 (Research track)
2020	PC member of ICPM 2020 (Demo track)
2020	PC member of ICPM workshop EdbA 2020
2020	PC member of BPM 2020 (Foundation track)
2020-2022	Reviewer for Journals: BISE, Information Systems
2019	PC member of AAAI workshop IPA 2020
2019	PC member of IEEE ICPM 2019
2015 - 2019	Reviewer for BPM'15,'16,&'19, ER'19
2015	local organizer for BPM'15 demo track

WORK EXPERIENCE - INDUSTRY AND OTHERS

2018.01 - 2018.03	Software Engineer in the Back-End team, leading the research into Process Mining Engine	Celonis SE, Munich
2012.11 - 2013.09	IT Advisor - Internship and master project at KPMG IT Advisory, worked on <i>Extraction of event data from the SAP systems to conduct process mining and process intelligence projects</i>	KPMG, Eindhoven
2009 - 2010	Travel committee for the Honors program organized a study tour to Switzerland for the Honors students (about 26 students). Visited CERN, ETH Zurich, etc.	TU/e, Eindhoven

SOFTWARE DEVELOPMENT & DATA SCIENCE PROJECTS

2013-2019

Software developer

Gained extensive experience in developing an open source framework Process Mining toolkits, known as ProM ([link](#)), and developed various tools/plugins/visualizations for ProM in Java

- PartialOrderReplayer ([link](#)) - a tool/plugin to analyze process compliance, detect abnormal behavior that deviates from the normative model, and visualize diagnostics about deviations
- L2Me ([link](#)) ([demo](#)) - a tool/plugin to preprocess event data, cluster behavior, and explore various model representations
- LPE - a tool/plugin to interactively detect and extend behavior patterns in event data of processes and explore process behavior

2013-2019

Process/data scientist

conducted various process analysis and research projects which include project management and collaborations with various external partners:

- VUmc - analyzed patient clustering and patient pathways
- IBM - analyzed purchase to pay (P2P) process
- MUMC - analyzed patient healthcare process
- AMC - analyzed privacy infringements in patient record accesses
- Hilti Group - analyzed customer buying behavior

REFERENCES

Prof.dr.ir. **Wil M.P. van der Aalst**

Full professor at the Department of Computer Science in the RWTH Aachen University | wvdaalst@pads.rwth-aachen.de | www.padsweb.rwth-aachen.de/wvdaalst/

dr.ir. **Dirk Fahland**

Associate professor at the department of Mathematics and Computer Science in the TU/e | d.fahland@tue.nl | www.win.tue.nl/~dfahland/

Prof.dr.ir. **Hajo A. Reijers**

Full professor at the Department of Information and Computing Sciences of Utrecht University |
Part-time full professor at the Department of Mathematics and Computer Science of Eindhoven University of Technology (TU/e) |
h.a.reijers@uu.nl | www.win.tue.nl/~hreijers/

Prof.dr. **Arthur ter Hofstede**

Head of the School of Information Systems within Queensland University of Technology |
a.terhofstede@qut.edu.au | yawlfoundation.org/arthur/

RELEVANT SKILLS

Computing: Java | Python | R | C++ | Latex

Language: Native Chinese | professional English | fluent Dutch

PUBLICATIONS

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Articles in peer-reviewed journals

From action to response to effect: Mining statistical relations in work processes

Jelmer Jan Koorn, Xixi Lu, Henrik Leopold, and Hajo A. Reijers

Inf. Syst. 109 (2022) p. 102035. 2022

Process mining for healthcare: Characteristics and challenges

Jorge Munoz-Gama, Niels Martin, Carlos Fernández-Llatas, Owen A. Johnson, Marcos Sepúlveda, Emmanuel Helm, Victor Galvez-Yanjari, Eric Rojas, Antonio Martinez-Millana, Davide Aloini, Ilaria Angela Amantea, Robert Andrews, Michael Arias, Iris Beerepoot, Elisabetta Benevento, Andrea Burattin, Daniel Capurro, Josep Carmona, Marco Comuzzi, Benjamin Dalmas, Rene de la Fuente, Chiara Di Francescomarino, Claudio Di Ciccio, Roberto Gatta, Chiara Ghidini, Fernanda Gonzalez-Lopez, Gema Ibáñez-Sánchez, Hilda B. Klasky, Angelina Prima Kurniati, Xixi Lu, Felix Mannhardt, Ronny Mans, Mar Marcos, Renata Medeiros de Carvalho, Marco Pegoraro, Simon K. Poon, Luise Pufahl, Hajo A. Reijers, Simon Remy, Stefanie Rinderle-Ma, Lucia Sacchi, Fernando Seoane, Minseok Song, Alessandro Stefanini, Emilio Sulis, Arthur H. M. ter Hofstede, Pieter J. Toussaint, Vicente Traver, Zoe Valero-Ramon, Inge van de Weerd, Wil M. P. van der Aalst, Rob J. B. Vanwersch, Mathias Weske, Moe Thandar Wynn, and Francesca Zerbato

J. Biomed. Informatics 127 (2022) p. 103994. 2022

Interactive clustering: A scoping review

Thais Rodrigues Neubauer, Sarajane Marques Peres, Marcelo Fantinato, Xixi Lu, and Hajo A. Reijers

Artificial Intelligence Review (2020). 2020

Linking data and process perspectives for conformance analysis

Mahdi Alizadeh, Xixi Lu, Dirk Fahland, Nicola Zannone, and Wil M. P. van der Aalst

Computers & Security 73 (2018) pp. 172–193. 2018

The imprecisions of precision measures in process mining

Niek Tax, Xixi Lu, Natalia Sidorova, Dirk Fahland, and Wil M.P. van der Aalst

Information Processing Letters 135 (2018) pp. 1–8. 2018

Discovering Interacting Artifacts from ERP Systems

Xixi Lu, Marijn Nagelkerke, Dennis van de Wiel, and Dirk Fahland

IEEE Trans. Services Computing 8.6 (2015) pp. 861–873. 2015

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International peer-reviewed conference proceedings

Uncovering Complex Relations in Patient Pathways based on Statistics: the Impact of Clinical Actions

Jelmer Jan Koorn, Xixi Lu, Felix Mannhardt, Henrik Leopold, and Hajo Alexander Reijers

HICSS, 2022

The Analysis of Online Event Streams: Predicting the Next Activity for Anomaly Detection

Suhwan Lee, Xixi Lu, and Hajo A. Reijers

RCIS, 2022

DEUCE: A Methodology for Detecting Unauthorized Access of Electronic Health Records Using Process Mining

Victor van Andel, Iris Beerepoot, Xixi Lu, Inge van de Weerd, and Hajo A. Reijers

28th European Conference on Information Systems - Liberty, Equality, and Fraternity in a Digitizing World , ECIS 2020, Marrakech, Morocco, June 15-17, 2020, 2021

Seeing the Signs of Workarounds: A Mixed-Methods Approach to the Detection of Nurses' Process Deviations

Iris Beerepoot, Xixi Lu, Inge van de Weerd, and Hajo A. Reijers

54th Hawaii International Conference on System Sciences, HICSS 2021, Kauai, Hawaii, USA, January 5, 2021, 2021

Bringing Rigor to the Qualitative Evaluation of Process Mining Findings: An Analysis and a Proposal

Jelmer Jan Koorn, Iris Beerepoot, Vinicius Stein Dani, Xixi Lu, Inge van de Weerd, Henrik Leopold, and Hajo A. Reijers

ICPM, 2021

Looking for Meaning: Discovering Action-Response-Effect Patterns in Business Processes (BEST STUDENT PAPER)

Jelmer Jan Koorn, Xixi Lu, Henrik Leopold, and Hajo A. Reijers
BPM, 2020

Discovering Hierarchical Processes Using Flexible Activity Trees for Event Abstraction

Xixi Lu, Avigdor Gal, and Hajo A. Reijers
2nd International Conference on Process Mining, ICPM 2020, Padua, Italy, October 4-9, 2020, 2020

Automated Robotic Process Automation: A Self-Learning Approach

Junxiong Gao, Sebastiaan J. van Zelst, Xixi Lu, and Wil M. P. van der Aalst
OTM Conferences, 2019

Trace Clustering on Very Large Event Data in Healthcare Using Frequent Sequence Patterns

Xixi Lu, Seyed Amin Tabatabaei, Mark Hoogendoorn, and Hajo A. Reijers
BPM, 2019

Identifying Patient Groups based on Frequent Patterns of Patient Samples

Seyed Amin Tabatabaei, Xixi Lu, Mark Hoogendoorn, and Hajo A. Reijers
IEEE Healthcom, 2019

Semi-supervised Log Pattern Detection and Exploration Using Event Concurrence and Contextual Information

Xixi Lu, Dirk Fahland, Robert Andrews, Suriadi Suriadi, Moe Thandar Wynn, Arthur H. M. ter Hofstede, and Wil M. P. van der Aalst
On the Move to Meaningful Internet Systems. OTM 2017 Conferences - Confederated International Conferences: CoopIS, C&TC, and ODBASE 2017, Rhodes, Greece, October 23-27, 2017, Proceedings, Part I, 2017

Handling Duplicated Tasks in Process Discovery by Refining Event Labels

Xixi Lu, Dirk Fahland, Frank J. H. M. van den Biggelaar, and Wil M. P. van der Aalst
Business Process Management - 14th International Conference, BPM 2016, Rio de Janeiro, Brazil, September 18-22, 2016. Proceedings, 2016

PM^{^2} : A Process Mining Project Methodology

Maikel L. van Eck, Xixi Lu, Sander J. J. Leemans, and Wil M. P. van der Aalst
Advanced Information Systems Engineering - 27th International Conference, CAiSE 2015, Stockholm, Sweden, June 8-12, 2015, Proceedings, 2015

Conformance checking in healthcare based on partially ordered event data

Xixi Lu, Ronny Mans, Dirk Fahland, and Wil M. P. van der Aalst
Proceedings of the 2014 IEEE Emerging Technology and Factory Automation, ETFA 2014, Barcelona, Spain, September 16-19, 2014, 2014

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International peer-reviewed workshop proceedings

Towards Understanding the Role of the Human in Event Log Extraction

Vinicius Stein Dani, Henrik Leopold, Jan Martijn E. M. van der Werf, Xixi Lu, Iris Beerepoot, Jelmer Jan Koorn, and Hajo A. Reijers
Business Process Management Workshops, 2021

Continuous Performance Evaluation for Business Process Outcome Monitoring

Suhwan Lee, Marco Comuzzi, and Xixi Lu
ICPM Workshops, 2021

Active Anomaly Detection for Key Item Selection in Process Auditing

Ruben Post, Iris Beerepoot, Xixi Lu, Stijn Kas, Sebastiaan Wiewel, Angelique Koopman, and Hajo A. Reijers
ICPM Workshops, 2021

Towards Understanding Aggressive Behavior in Residential Care Facilities Using Process Mining

Jelmer Jan Koorn, Xixi Lu, Henrik Leopold, and Hajo A. Reijers
ER Workshops, 2019

A Conceptual Framework for Understanding Event Data Quality for Behavior Analysis

Xixi Lu and Dirk Fahland

Proceedings of the 9th Central European Workshop on Services and their Composition (ZEUS 2017), Lugano, Switzerland, February 13-14, 2017. 2017

Discovering Interacting Artifacts from ERP Systems (Extended Abstract)

Dirk Fahland, Xixi Lu, Marijn Nagelkerke, and Dennis van de Wiel

Proceedings of the 7th International Workshop on Enterprise Modeling and Information Systems Architectures, EMISA 2016: Fachgruppentreffen der GI-Fachgruppe Entwicklungsmethoden für Informationssysteme und deren Anwendung, Vienna, Austria, October 3-4, 2016. 2016

Interactively Exploring Logs and Mining Models with Clustering, Filtering, and Relabeling

Xixi Lu, Dirk Fahland, and Wil M. P. van der Aalst

Proceedings of the BPM Demo Track 2016 Co-located with the 14th International Conference on Business Process Management (BPM 2016), Rio de Janeiro, Brazil, September 21, 2016. 2016

Detecting Deviating Behaviors Without Models

Xixi Lu, Dirk Fahland, Frank J. H. M. van den Biggelaar, and Wil M. P. van der Aalst

Business Process Management Workshops - BPM 2015, 13th International Workshops, Innsbruck, Austria, August 31 - September 3, 2015, Revised Papers, 2015

Conformance Checking Based on Partially Ordered Event Data

Xixi Lu, Dirk Fahland, and Wil M. P. van der Aalst

Business Process Management Workshops - BPM 2014 International Workshops, Eindhoven, The Netherlands, September 7-8, 2014, Revised Papers, 2014