Rianne M. Schouten – Resume

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Career objective

As a researcher, I am motivated to develop Local Pattern Mining methods (LPMs) that extract reliable and robust patterns from data that does not follow the conventional row-by-column format, such as sequential and hierarchical data. In my teaching and supervision, I aim to support students in becoming independent learners. Furthermore, I prefer the topics of my teaching to be intertwined with state-of-the-art research.

Research

Feb 2020 - Present

Doctoral Candidate (Pre-doc since June 2024, dissertation submitted)

Data Mining Group, Eindhoven University of Technology, the Netherlands

My dissertation presents new methodologies for Exceptional Model Mining for Hierarchical Data, and additionally demonstrates successful deployment in real-world use cases.
Supervisors: prof. dr. Mykola Pechenizkiy, dr. Wouter Duivesteijn.

Funding

On the topic of Better Imputation by Generative Adversarial NeTworks (BIGANT), I brought together TU/e with Utrecht University and other Dutch universities and contributed to obtaining a seed money grant in the AI for Health call from the EWUU Alliance.

For the call Take-off phase 1, Autumn 2024, Feasibility study WO Commit2Data, from NWO, I have reached the interview phase (scheduled for Nov. 2024) with my proposal to integrate local pattern mining techniques into digital assessment tools.

I volunteered to be Proceedings Chair for ECML PKDD 2024 and received €500 as reimbursement for my entree ticket.

Awards

My skills and achievements were recognized with a performance bonus in 2021, with two awards for excellent course evaluations in 2021 and 2022, and by being pronounced as an excellent reviewer at ECML PKDD 2024.

Collaborations

I set up fruitful collaborations with various knowledge institutes, such as Trimbos Institute (the Netherlands), Erasmus MC (the Netherlands) and Turku Research Institute for Learning Analytics (Finland). Some of these collaborations have already resulted in shared publications.

Supervision

In November 2023, I informally started supervising PhD Candidate Emmanuel C. Chukwu on the topic of Counterfactual Explanations for Multivariate Time Series Classification.

Research interests

Local Pattern Mining – Hierarchical data – Reliability – Time-variant data – Experimental designs – Robustness – Causality – Missing data – Interpretability – Statistics

Competencies

Ability to learn – Independence – Analytical skills – Perseverance – Assertiveness – Problem solving – Results-oriented – Project management – Interdisciplinary way of working

June 2017 - May 2019 **Researcher**
Department of Methodology and Statistics, University of Utrecht, the Netherlands

My research focused on evaluating missing data methods, including designing experiments and developing methods for generation of missing values (i.e., amputation).
Supervisors: prof. dr. Stef van Buuren, dr. Gerko Vink.

Statistical consultant
I am trained to be a statistical consultant and support domain experts in doing statistically sound and trustworthy analyses. Some of my projects resulted in domain-specific publications.

Software
I contributed to open source software development. We implemented our multivariate amputation framework in R-function `ampute` in R-package `mice`. Worldwide, people use our method. I still regularly advise and assist researchers with their missing data and amputation problems.

Nov 2016 - Dec 2016 **Staff Associate of Professor Andrew Gelman**
Columbia University in the City of New York

I visited the STAN development team. The visit resulted in a publication.

Sep 2015 - Dec 2015 **SRON, Dutch Institute of Space Research**
Internship during MSc., Grade: 9.0

At SRON, I applied Principal Component Analysis in a Physics context and designed an extensive simulation study. The work resulted in a SPIE conference paper.

Publications

2024 **Schouten, R.M.** On the role of prognostic factors and effect modifiers in structural causal models. Accepted for presentation at Causal Representation Learning Workshop NeurIPS.

2024 van den Berg, N. T., Broekgaarden, B. O., Mahieu Dionysia, P., Martens, J. G., Niederle, J., **Schouten, R.M.** & Duivesteijn, W. Generating MNAR missingness in image data, with additional evaluation ofMisGAN. Accepted for presentation at BNAIC/BeNeLearn 2024.

2024 **Schouten, R.M.**, Stevens, G.W.J.M., van Dorsselaer, S.A.F.M., Duinhof, E.L., Monshouwer, K., Pechenizkiy, M. & Duivesteijn, W. Analyzing the interplay between societal trends and socio-demographic variables with local pattern mining: Discovering exceptional trends in adolescent alcohol use in the Netherlands. Accepted for presentation at BNAIC/BeNeLearn 2024.

2024 **Schouten, R.M.**, Duivesteijn, W., Rasanen, P, Paul, J.M., & Pechenizkiy, M. Exceptional Subitizing Range: Exploring Mathematical Abilities of Finnish Primary School Children with Piecewise Linear Regression. In: Proc. ECML PKDD, pp. 66-82.

2023 **Schouten, R.M.**, Tascau, V., Ziegler, G.G., Casano, D., Ardizonne, M., & Erotokritou M.A. Dropping incomplete records is (not so) straightforward. In: Proc IDA, pp. 379-391.

2022 Verhaegh, R.F.A., Kiezebrink, J.J.E., Nusteling, F., Rio, A.W.A, Bendicsek, M.B., Duivesteijn, W. & **Schouten, R.M.** A Clustering-inspired Quality Measure for Exceptional Preferences Mining — Design Choices and Consequences. In: Proc. DS, pp. 429–444.

2022 Van der Haar, J.F., Nagelkerken, S.C., Smit, I.G., van Straaten, K., Tack, J.A., **Schouten, R.M.** & Duivesteijn, W. Efficient Subgroup Discovery Through Auto-Encoding. In: Proc. IDA, pp. 327-340.

2022 **Schouten, R.M.**, Duivesteijn, W. & Pechenizkiy, M. Exceptional Model Mining for Repeated Cross-Sectional Data (EMM-RCS). In: Proc. SDM, pp. 585-593.

2022 **Schouten, R.M.**, Bueno, M.L.P., Duivesteijn, W. & Pechenizkiy, M. Mining Sequences with Exceptional Transition Behaviour of Varying Order using Quality Measures based on Information-Theoretic Scoring Functions. Data Mining and Knowledge Discovery, 36: 379-413.

2021 **Schouten, R.M.** & Vink, G. The dance of the mechanisms: How observed information influences the validity of missingness assumptions. Sociological Methods & Research, 50(3): 1243-1258.

2020 IJsselhof R, Duchateau S, **Schouten R.M.**, Slieker M, Hazekamp M & Schoof P. Long-Term Follow-Up of Pericardium for the Ventricular Component in Atrioventricular Septal Defect Repair. World Journal for Pediatric and Congenital Heart Surgery, 11(6): 742-747.

2019 IJsselhof R.J., Duchateau S.D.R., **Schouten R.M.**, Freund, M.W., Heuser, J., Fejzic, Z., Haas, F., Schoof, P.H. & Slieker, M.G. Follow-up After Biventricular Repair of the Hypoplastic Left Heart Complex. European Journal of Cardiothoracic Surgery, 57(4): 644-651.

2018 **Schouten R.M.**, Lugtig, P. & Vink, G. Generating missing values for simulation purposes: A multivariate amputation procedure. Journal of Statistical Computation and Simulation, 88(15): 1909-1930.

2017 Kappen, I.F.P.M., Bittermann, G.K.P., **Schouten, R.M.**, Bittermann, D., Etty, E., Koole, R., Kon, M., Van der Molen, M. & Breugem, C.C. Long-term mid-facial growth of patients with a unilateral complete cleft of lip, alveolus and palate treated by two-stage palatoplasty: cephalometric analysis. Clinical Oral Investigations, 21: 1801-1810.

2016 de Vries, C.P., **Schouten, R.M.**, Van der Kuur, J., Gottardi, L., & Akamatsu, H. (2016) [Microcalorimeter pulse analysis by means of principle component decomposition. In: Proc. SPIE 9905, Space TElescopes and Instrumentation 2016: Ultraviolet to Gamma Ray, 99055v. DOI: 10.1117/12.2231627

Teaching

Feb 2020 - Present

Doctoral Candidate (Pre-doc since June 2024)

Data Mining Group, Eindhoven University of Technology, the Netherlands

I participated in teaching in 4 Master courses: Foundations of Data Mining (2020), Research Topics in Data Mining (2021, 2022, 2024).
In 2021 and 2022, I received an award for excellent teaching.

"I took a lot of courses last year, but I like your instructions the most. It is not only because of your professional knowledge, but also because of your personality of being kind, patient, responsible." (Jin Ouyang, Master student)

Supervision

I successfully supervised about 10 Master students. They all completed their projects. Some projects have resulted in publications at conferences such as IDA, DS and BNAIC.

University Teaching Qualification

I have already successfully completed 3/6 courses of the UTQ program.

July 2015, July 2016

Teaching Assistant

Summer School Utrecht, the Netherlands

I taught in two summer school courses at Utrecht University, the Netherlands. Both courses are at an advanced Master level:
1) Survey Research: Design, Implementation and Data Processing,
2) Survey Research: Statistical Analysis and Estimation.

"Rianne was a first class assistant at our summer school courses. Not only was all material prepared extremely punctual and without errors, she also got very high student evaluations. I can wholeheartedly recommend Rianne!" (prof. dr. Edith de Leeuw)

Industry experience

March 2018 - Jan 2020 **Developer Data & Analytics**
Samen Veilig Midden-Nederland, the Netherlands

I structured and standardized the analyses of sensitive and highly classified data. In addition, I oversaw the system requirements and allocated work to other developers and stakeholders. Software: SQL, R, Logi Analytics, Power BI.

April 2017 - Feb 2018 **Data Scientist**
DPA Professionals - Excellence Programme for Data Science

Education

Feb 2020 - Present **Ph.D. in Data Mining**
Eindhoven University of Technology, the Netherlands

Dissertation submitted. Defense scheduled for 16 January 2025.

2015 - 2017 **M.Sc. in Methodology and Statistics for the Behavioral, Biomedical and Social Sciences**
Utrecht University, the Netherlands

GPA: 4.0

2009 - 2012 **B.Sc. in Medicine**
Utrecht University, the Netherlands

References

Prof. dr. Mykola Pechenizkiy
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Daily supervisor during Ph.D. trajectory
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