

Madelon Hulsebos

Amsterdam, NL | madelon@cwi.nl | madelonhulsebos.com | [trl-lab-github.io](https://TRL-Lab-GitHub.io)

My research involves machine learning, natural language processing, information retrieval and data management. I particularly focus on **representation learning and generative models for tabular data** (e.g. relational tables and spreadsheets) to democratize insights from tabular data.

EMPLOYMENT

Centrum Wiskunde & Informatica – Amsterdam, Netherlands

Tenure-track Researcher

Sep 2024 – present

- Established the *Table Representation Learning lab* focused on democratizing insights from tabular data.
- The TRL Lab is funded by a \$1M NWO AiNed grant, and industry and internal funding (total >\$2M).
- Initiated the *Table Representation Learning research theme* at the ELLIS unit Amsterdam, where I'm faculty.

University of California, Berkeley – Berkeley, United States

Postdoctoral Scholar, EECS and BIDS

Nov 2023 – Aug 2024

- Worked on methods and benchmarks for retrieval-augmented generation and search over tabular data.

University of Amsterdam – Amsterdam, Netherlands

PhD Researcher (external), Informatics Institute

Jan 2023 – Nov 2023

Guest Researcher, Informatics Institute

Aug 2020 – Jan 2023

- Initiated and pursued a research agenda on neural models for structured data, and applications thereof.
- Thesis title: Table Representation Learning.

Sigma Computing – San Francisco, United States

Full-time PhD Researcher, previously Research Intern (Summer 2021)

June 2021 – Dec 2022

- Developed a system for adaptive neural table models for applications like data cleaning and search.
- Contributed to the design and implementation of an interactive intelligent ML tool (Decision Studio).

KPN/HEINEKEN – Rotterdam/Amsterdam, Netherlands

Data Scientist

Mar 2019 – May 2021

- Built ML models and tools for financial forecasting and marketing analyses using e.g. Bayesian models.
- Mentored data analysts, led a reading group, and gave tutorials on data validation and transfer learning.

Massachusetts Institute of Technology – Cambridge, United States

Visiting Collaborator, MIT Media Lab

Aug 2018 – Mar 2019

- Led research on semantic type detection in tables (Sherlock). Sherlock is well adopted in industry and benchmarks in research. Also contributed to a data visualization benchmarking project (VizNet).

Delft University of Technology – Delft, Netherlands

Graduate TA, Pattern Recognition & Web Information Systems groups

Sep 2017 – Feb 2018

- TA for the MSc courses: Pattern Recognition (IN4085), Web Science & Engineering (IN4252).
- Supported 250+ graduate students in labs and projects, and evaluated student assignments.

Aalto University – Helsinki, Finland

Research and Teaching Assistant, Machine Learning for Big Data

July - Oct 2017

- Developed material for a BSc course on Machine Learning, in which 500+ students participated.
- Conducted experiments for semi-supervised learning over networks, and presented at ICASSP.

EDUCATION

University of Amsterdam – Amsterdam, Netherlands

PhD Computer Science

Sep 2020 – Feb 2024

Delft University of Technology – Delft, Netherlands

MSc Computer Science

Sep 2016 – July 2018

BSc Technology, Policy and Management

Sep 2011 – July 2015

ANCILLARY ACTIVITIES

PriorLabs – Berlin/Freiburg, Germany
Scientific Advisory Board Member Nov 2025 – present

UniPartners Delft – Delft, Netherlands
Supervisory Board Member May 2017 – Dec 2023
Executive Board Member Feb 2015 – Feb 2016

ACADEMIC SERVICE

Chairing

Co-chair Tutorial Track @ VLDB	2025
Co-chair, New Researcher Symposium @ SIGMOD	2025
Co-chair Seminar on Challenges and Opportunities in Table Representation Learning @ Dagstuhl	2025
Co-chair Representation Learning and Generative Models for Structured Data @ ELLIS Amsterdam	2025
Initiator, Table Representation Learning research theme @ ELLIS Amsterdam	2025
Founder and co-chair, Table Representation Learning workshop (TRL) @ NeurIPS, ACL	2022-2025
Co-chair, Data Management for End-to-End ML workshop (DEEM) @ SIGMOD	2023-2025
Steering Committee, Tabular Data Analysis workshop (TaDA) @ VLDB	2023, 2024
Co-chair, SemTab challenge @ ISWC	2021-2023

Conference/Journal Reviewing

Conference of Innovative Data Systems Research (CIDR)	2026
SIGMOD	2026
VLDB Journal	2025-
PVLDB	2024-2025
NeurIPS (Datasets & Benchmarks track)	2021-2025
ICDE (Industry track)	2024
EDBT (Industry track)	2022-2023
TheWebConf (Industry track)	2022-2023

Workshop Reviewing

NOVAS @ SIGMOD (2025), aiDM @ SIGMOD (2024), DMLR @ ICML (2023, 2024), DBML @ ICDE (2023, 2024), PhD workshop @ VLDB (2023), SemTab @ ISWC (2021 - 2023), AIDB @ VLDB (2022).

Editorial

Assistant Editor, Journal of Systems Research (JSys) 2022 - 2023

ADVISING AND COMMITTEES

Advising postdoc/PhD

Rohith Prakabaran, CWI, PhD	2026-
Xue (Effy) Li, CWI, Postdoc	2025-
Cornelius Wolff, CWI, PhD	2025-
Daniel Gomm, CWI, PhD	2024-

Advising (under)graduate

Hongqian Xia, University of Amsterdam, MSc	2026-
Lisa van Oosten, University of Amsterdam, MSc	2026-
Ivana Pleša, University of Amsterdam, MSc	2026-
Ahmed Omar, Utrecht University, MSc	2025-
Daniel De Dios, TU Delft, BSc	2025-
Wojciech Kosiuk, University of Amsterdam, MSc	2025-
Jan Henrik Bertrand, University of Amsterdam, MSc	2025-
Nikola Selic, TU Munich, MSc	2025
Liang Telkamp, University of Amsterdam, MSc (🏆 Amsterdam AI Thesis Award)	2025
Nikola Selic, TU Munich, MSc	2025
Wenjing Lin, UC Berkeley, MSc	2024-2025
Rachel Lin, UC Berkeley, MSc	2024-2025
Xingyu (Carl) Ji, UC Berkeley, BSc	2023-2025
Teun Mathijssen, University of Amsterdam, MSc	2023

PhD Thesis Committees

Margherita Martorana, VU Amsterdam, PhD	2025
Vaishali Pal, University of Amsterdam, PhD	2025
Tianji Cong, University of Michigan, PhD	2023-2025

AWARDS AND FUNDING

Research grant for collaboration CWI x Inria on TRL, €627K, CWI	2025
Table Representation Learning Research Grant, €300K, SAP	2024
AiNed Fellowship Grant, €993K, NWO	2024
Table Representation Learning Theme in ELLIS unit Amsterdam, €50K, SAP	2024
Postdoctoral Fellowship, \$150K, Accenture-BIDS	2023
Best Reviewer Award, PhD Workshop, VLDB	2023
Travel Award, \$2.5K, VLDB Endowment	2022
Honorable mention GitTables, SemTab challenge	2021

TALKS, PANELS AND LECTURES

Talks

What are we asking from Tabular Data?

AI for Tabular Data workshop, EurIPS 2025	Dec 2025
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Towards robust open-domain querying over structured data

KIK AI seminar, Amsterdam University Medical Center	Nov 2025
ELLIS NL Scientific Day	Oct 2025
AI Research Retreat, SAP	July 2025
Business Analytics Seminar, University of Amsterdam	July 2025
Seminar on AI, Semantics, and Tabular Data, IBM	May 2025

What Table Representation Learning brings to Data Systems

COMPASS Seminar, ETH, Zürich, Switzerland	Dec 2024
CWI Lectures, CWI, Amsterdam, Netherlands	Nov 2024

Retrieval Systems for Structured Data: the missing piece for grounding LLM-powered query interfaces in factual data

Berkeley Institute for Data Science Seminar, Berkeley, USA	Oct 2024
Berkeley EECS EPIC Retreat, Berkeley, USA	Oct 2024
Harnessing AI for Relational Data: Industry and Research Perspectives, SF, USA	Oct 2024

Advances, challenges, and opportunities in Table Representation Learning

Microsoft Gray Systems Lab, USA	July 2024
University of Washington Seattle, Seattle, USA	May 2024
Snowflake, USA	May 2024
Google, Sunnyvale, USA	Apr 2024
UC Berkeley, Berkeley, USA	Mar 2024
Transformers at Work 2023, Zeta Alpha, Amsterdam, Netherlands	Sep 2023

Towards Table Representation Learning for end-to-end data management and analysis

INRIA-Saclay, Paris, France	Apr 2023
ML for Systems and Systems for ML Workshop @ BTW, Dresden, Germany	Mar 2023
Hasso Plattner Institute, Berlin, Germany	Mar 2023
TU Darmstadt, Darmstadt, Germany	June 2022

GitTables: a large corpus of relational tables

Tabular Data Analysis workshop, VLDB, Vancouver, Canada	Aug 2023
Database Architectures group, CWI, Amsterdam, Netherlands	Feb 2022

(Guest) Lectures

Representation Learning and Generative Models for Tabular Data

BIFOLD, TU Berlin	Jan 2025
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Panel discussions

“Neural Relational Data: Tabular Foundation Models, LLMs... or both?”, VLDB, London Sep 2025
Transformers at Work 2023, Zeta Alpha, Amsterdam, Netherlands Sep 2023

PUBLICATIONS

2025

SQaLe: A Large Text-to-SQL Corpus Grounded in Real Schemas, **AI for Tabular Data workshop at EurIPS 2025**
Wolff, C., Gomm, D., Hulsebos, M.

Are We Asking the Right Questions? On Ambiguity in Natural Language Queries for Tabular Data Analysis, **AI for Tabular Data workshop at EurIPS 2025**
Gomm, D., Wolff, C., Hulsebos, M.

Unlocking the Full Potential of Data Science Requires Tabular Foundation Models, Agents, and Humans, **In Review**
Cong, T., Eisenschlos, J., Gomm, D., Grinsztajn, L., Müller, A., Sanghi, A., et al., Binnig, C., Hulsebos, M., Hutter, F.

Protecting contextual sensitive data in open data portals, **In Review**
Telkamp, L., Hulsebos, M.

How well do LLMs reason over tabular data, really?, **Table Representation Learning workshop at ACL**
Wolff, D., Hulsebos, M.

Rethinking Dataset Discovery with DataScout, **User Interface Software and Technology (UIST)**
Lin, R., Chopra, B., Lin, W., Shankar, S., Hulsebos, M., Parameswaran, A.

Metadata Matters in Dense Table Retrieval, **ELLIS workshop on RL and GM for Structured Data**
Gomm, D., Hulsebos, M.

TARGET: Benchmarking Table Retrieval for Generative Tasks, **In Review**
Li, X., Glenn, P., Parameswaran, A., Hulsebos, M.

Towards Accurate and Efficient Document Analytics with Large Language Models, **ICDE**
Lin, Y., Hulsebos, M., Ma, R., Shankar, S., Zeigham, S., Parameswaran, A. G., & Wu, E.

2024

TARGET: Benchmarking Table Retrieval for Generative Tasks, **TRL @ NeurIPS**
Li, X., Parameswaran, A., Hulsebos, M.

“It Took Longer than I was Expecting:” Why is Dataset Search Still so Hard?, **HILDA@SIGMOD**
Hulsebos, M., Lin, W., Shankar, S., Parameswaran, A.

SchemaPile: A Large Collection of Relational Database Schemas, **SIGMOD**
Doehmen, T., Geacu, R., Hulsebos, M., Schelter, S.

SPADE: Synthesizing Assertions for Large Language Model Pipelines, **Proceedings of VLDB**
Shankar, S., Li, H., Asawa, P., Hulsebos, M., Lin, Y., Zamfirescu-Pereira, J., Chase, H., Fu-Hinthorn, W.,
Parameswaran, A., Wu, E.

Eighth Workshop on Data Management for End-to-End Machine Learning (DEEM), **SIGMOD**
Hulsebos, M., Shankar, S., Interlandi, M.

2023

AdaTyper: Adaptive Semantic Type Detection, **ArXived**
Hulsebos, M., Groth, P., Demiralp, C.

Introducing the Observatory Library for End-to-End Table Embedding Inference, **TRL @ NeurIPS**
Cong, T., Sun, Z., Groth, P., Jagadish, H., Hulsebos, M.

Observatory: Characterizing Embeddings of Relational Tables, **Proceedings of VLDB**
Cong, T., Hulsebos, M., Sun, Z., Groth, P., Jagadish, H.V.

Models and Practice of Neural Table Representations [tutorial], SIGMOD
Hulsebos, M., Deng, X., Sun, H., Papotti, P.

Seventh Workshop on Data Management for End-to-End Machine Learning (DEEM), SIGMOD
Boehm, M., Hulsebos, M., Shankar, S., Varma, P.

2022

GitTables: A Large-Scale Corpus of Relational Tables, SIGMOD
Hulsebos, M., Demiralp, C., Groth, P.

GitSchemas: A Dataset for Automating Relational Data Preparation Tasks, DBML @ ICDE
Döhmen, T., Hulsebos, M., Beecks, C., Schelter, S.

Results of SemTab 2022, Proceedings of SemTab @ ISWC

Abdelmageed, N., Chen, J., Cutrona, V., Efthymiou, V., Hassanzadeh, O., Hulsebos, M., Jiménez-Ruiz, E., Sequeda, J. and Srinivas, K.

Making Table Understanding Work in Practice [abstract], CIDR

Hulsebos, M., Gathani, S., Gale, J., Dillig, I., Groth, P., Demiralp, C.

Augmenting Decision Making via Interactive What-If Analysis, CIDR

Gathani, S., Hulsebos, M., Gale, J., Haas, P. J., Demiralp, C.

2021

Results of SemTab 2021, Proceedings of SemTab @ ISWC

Cutrona, V., Chen, J., Efthymiou, V., Hassanzadeh, O., Jiménez-Ruiz, E., Sequeda, J., Srinivas, K., Abdelmageed, N., Hulsebos, M., Oliveira, D., Pesquita, C.

2020

Sato: Contextual semantic type detection in tables, Proceedings of VLDB

Zhang, D., Suhara, Y., Li, J., Hulsebos, M., Demiralp, C., Tan, W.

2019

Sherlock: A deep learning approach to semantic data type detection, ACM SIGKDD

Hulsebos, M., Hu, K., Bakker, M., Zgraggen, E., Satyanarayan, A., Kraska, T., Demiralp, C., Hidalgo, C.

VizNet: Towards a large-scale visualization learning and benchmarking repository, ACM CHI

Hu, K., Gaikwad, N., Hulsebos, M., Bakker, M., Zgraggen, E., Hidalgo, C., Kraska, T., Li, G., Satyanarayan, A., Demiralp, C.

2018

The Network Nullspace Property for Compressed Sensing of Big Data Over Networks, IEEE ICASSP

Hulsebos, M., Jung, A.