

Daphne Collaris-Miedema

PHD CANDIDATE · EDUCATION ENTHUSIAST

Eindhoven, the Netherlands

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Education

PhD candidate on the topic of Database Education

EINDHOVEN UNIVERSITY OF TECHNOLOGY

Dec. 2019 - Jan. 2024

Eindhoven, Netherlands

- Passed with honors (distinction awarded to top 5% of dissertations)
- 25% teaching and supervision, 75% research
- Research areas: SQL misconceptions, SQL complexity, Teaching interventions
- Research visit at Glasgow University Feb. - Apr. 2024

MSc. in Computer Science and Engineering &

MSc. in Human-Technology Interaction

EINDHOVEN UNIVERSITY OF TECHNOLOGY

Feb. 2015 - Nov. 2019

Eindhoven, Netherlands

- MSc Thesis: Towards successful interaction between Humans and Databases

BSc. in Computer Science and Engineering

EINDHOVEN UNIVERSITY OF TECHNOLOGY

Sep. 2011 - Feb. 2015

Eindhoven, Netherlands

- Minor in Human-Technology Interaction
- Software Engineering Project: Application Development for Search Engine Optimization

Teaching Experience

Daily supervision

MSC STUDENTS IN DATA SCIENCE AND AI, COMPUTER SCIENCE AND ENGINEERING

2021 - current

Eindhoven University of
Technology

- Jeroen Besems: SQL question difficulty on Stack Overflow
- Leonardo Mathon: Code smells in SQL exercises - [Led to an ICER poster](#)
- Alex Odynchuk: *SQLVis+*, visual representations for queries with variables out of scope - [Paper under review](#)
- Bas Witters: *SQLVis+*, visual representations for queries with aggregation errors
- Dmitrii Orlov: Static typing for SQL - [Paper under review](#)
- Willem Aerts: SQL exercise generation through LLMs - [Paper in preparation](#)

Course development and lecturer

KNOWLEDGE ENGINEERING

2021 - current

Eindhoven University of
Technology

- Target audience: Elective for MSc students in Data Science and AI (80 students)
- Co-developed a new course for our new Master of Science program
- Delivered part of the lectures
- Managing and grading group work

Instructor

DATA MODELING AND DATABASES

2020 - current

Eindhoven University of
Technology

- Target audience: mandatory course for second-year Bachelor students from Computer Science, but the course can also be taken as an elective by other students or as a homologation course
- Leading instruction groups on all kinds of introductory topics (80 students)
- Developing homework exercises and exam questions, and grading them

Senior Supervisor

DATA ANALYTICS FOR ENGINEERS

2017 - current

Eindhoven University of
Technology

- Target audience: mandatory course for first-year Bachelor students from all study programs offered at TU/e
- Teaching students the fundamentals of Data Analysis in Python through Jupyter notebooks (250 students)
- Managing student assistants who run the lab sessions for this course (10 assistants)
- Regular instructor since 2017, Senior Supervisor since 2020

Lecturer

PRE-UNIVERSITY COLLEGE

- Developing materials on data cleaning, interpolation and prediction for a high-school audience
- Running lecture/instruction sessions for groups of 20 students

2015

*Eindhoven University of
Technology*

Committees

Workshop Co-founder and Co-chair

DATAED 2023 @ SIGMOD

- Co-organising the DataEd workshop at SIGMOD 2023
- Bringing together the Data Systems, Computer Science Education, and Statistics Education communities
- Managing all digital presence for the workshop

2023

Seattle, USA

Workshop Co-founder and Co-chair

DATAED 2022 @ SIGMOD

- Proposing and ideating a workshop to bring together the Data Systems and Computer Science Education communities
- Championing Data Systems Education as a theme of interest for the SIGMOD community
- Co-organising the DataEd workshop at SIGMOD 2022
- Managing all digital presence for the workshop
- Organizing workshop proceedings with ACM TAPS
- Writing a reflection document in preparation for the next iteration of DataEd

2022

Philadelphia, USA

Officer of Talks

AUTONOMIT - SNIC

- Co-organised the yearly Computer Science Symposium for the Dutch Student Symposium on Computer Science and Engineering [Stichting Nationaal Informatica Congres (SNIC)], on the topic of Autonomous Technologies
- Selected appropriate topics for talks on the symposium
- Approached and met with presenters to discuss their talks

2015

Evoluon, Eindhoven

Reviewer

CONFERENCES AND JOURNALS

- SIGCSE '22, '23, and '24 posters
- Computer Science Education journal
- ACM Transactions on Computing Education journal
- Meta-reviews for DataEd'22

University Service

Research group website

DAI.WIN.TUE.NL

- Implementing new features in both the front- and backend
- Brainstorming and designing new pages
- Content management

2021 - current

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Technology*

Internal assessment

RESEARCH QUALITY

- Summarizing internal efforts on research to an external committee
- Discussing strong points as well as suggesting points for improvement

2022

*Eindhoven University of
Technology*

Invited talks

On SQL Complexity for Novices

DUTCH COMPUTER SCIENCE TEACHER DAY ON DIDACTICS [VAKDIDAKTIEKDAG INFORMATICA]

- Explaining why SQL is so interesting to study
- Presenting results from various studies

Sept 2022

Open University, Utrecht

Honors & Awards

INTERNATIONAL

2023	Invited participant , Future Female Faculty program (F+Cube)	TU Delft
2023	Invited participant , Simon Initiative LearnLab Summer School	Carnegie Mellon University
2023	Best paper candidate , Conference on Innovation and Technology in Computer Science Education (ITiCSE)	Turku, Finland
2021	Best poster award (audience choice) , Alice and Eve	Nijmegen, NL
2021	Honorable mention and reprint in ACM Inroads , ACM Conference on International Computing Education Research (ICER)	Virtual event
2020	Best poster award , Alice and Eve	Enschede, NL

Academic Contributions

“There is no ambiguity on what to return”: Investigating the Prevalence of SQL Misconceptions

DAPHNE MIEDEMA, MICHAEL LIUT, GEORGE FLETCHER AND EFTHIMIA AIVALOGLOU

- Using our previously developed SQL misconception instrument, we analyzed the prevalence of various misconceptions
- All tested misconceptions were present in the new, larger, student population

2023
23rd International Conference on Computing Education Research

MSMI1: Towards a Validated SQL Misconceptions Instrument

DAPHNE MIEDEMA, MICHAEL LIUT, GEORGE FLETCHER AND EFTHIMIA AIVALOGLOU

- Using our knowledge on SQL misconceptions, developed an instrument to assess our students
- Validated the instrument through large-scale deployment

2023
19th ACM Conference on International Computing Education Research

Engaging Databases for Data Systems Education

TONI TAIPALUS, DAPHNE MIEDEMA AND EFTHIMIA AIVALOGLOU

- **Best paper candidate**
- Quantitatively analyzed students' perceptions on what makes an engaging database exercise
- Present an example database that corresponds to metrics as indicated by the students

2023
Conference on Innovation and Technology in Computer Science Education

Students' Perceptions on Engaging Database Domains and Structures

DAPHNE MIEDEMA, TONI TAIPALUS AND EFTHIMIA AIVALOGLOU

- Qualitatively analyzed students' perceptions on what makes an engaging database exercise
- Identified changes that teachers could make to their databases to increase student engagement

2023
54th ACM Technical Symposium on Computer Science Education

Report on the First International Workshop on Data Systems Education (DataEd'22)

EFTHIMIA AIVALOGLOU, GEORGE FLETCHER, MICHAEL LIUT AND DAPHNE MIEDEMA

- Reflected on the first iteration of our SIGMOD workshop
- Analyzed discussion themes that came up during the workshop

2023
ACM SIGMOD Record

Characterizing Data Scientists' Mental Models of Local Feature Importance

DENNIS COLLARIS, HILDE WEERTS, DAPHNE MIEDEMA, JACK VAN WIJK AND MYKOLA PECHENIZKIY

- Created an online questionnaire to examine data scientists' assumptions about feature importance techniques
- Identified mismatches between data scientists' expectations and implementations of explanation techniques
- Article in our campus paper on the research: <https://www.cursor.tue.nl/en/news/2022/november/week-2/data-scientists-dont-always-ask-questions-persistently-enough/>

2022
NordiCHI

Increasing Awareness of SQL Anti-Patterns for Novices: A Study Design

LEONARDO MATHON AND DAPHNE MIEDEMA

- Developed a tool for identification of SQL anti-patterns
- Teach students to reduce anti-patterns in their queries

2022
18th ACM Conference on International Computing Education Research

So many brackets! An analysis of how SQL learners (mis)manage complexity during query formulation

DAPHNE MIEDEMA, GEORGE FLETCHER AND EFTHIMIA AIVALOGLOU

- Calculated various complexity metrics over students' query formulation problem answers.
- Identified a new reason for students' struggle with query formulation: self-imposed complexity.

2022

*30th IEEE/ACM International
Conference on Program
Comprehension*

Expert Perspectives on Student Errors in SQL

DAPHNE MIEDEMA, GEORGE FLETCHER AND EFTHIMIA AIVALOGLOU

- Applied a Delphi-like study approach
- Presented SQL experts with student errors and invited their hypotheses on underlying causes

2022

*ACM Transactions on Computing
Education*

Exploring the Prevalence of SQL Misconceptions: a Study Design

DAPHNE MIEDEMA, EFTHIMIA AIVALOGLOU AND GEORGE FLETCHER

- Preparatory work for the 2023 paper at this same conference.

2021

*21st International Conference on
Computing Education Research*

Let's Ask the Experts: Insights into Student Misconceptions about SQL

DAPHNE MIEDEMA

- **Best poster award (audience choice)**
- Preliminary work for the ACM Transactions paper

2021

Alice and Eve '21

SQLVis: Visual Query Representations for Supporting SQL Learners

DAPHNE MIEDEMA AND GEORGE FLETCHER

- Developed a research prototype for graph-based visualisation of SQL queries.
- Java and d3.js
- <https://github.com/Giraphne/sqlvis>
- Code package is available to our students in one of our introductory Database courses

2021

*Symposium on Visual
Languages and Human-Centric
Computing*

Identifying SQL Misconceptions of Novices: Findings from a Think-Aloud Study

DAPHNE MIEDEMA, EFTHIMIA AIVALOGLOU AND GEORGE FLETCHER

- **Honorable mention**
- **Reprinted in ACM Inroads in the category "Worth reading from ICER'21"**
- Ran semi-structured interviews to gather data
- First paper to identify SQL misconceptions based on student data

2021

*17th ACM Conference on
International Computing
Education Research*

What are common mistakes that novices make when learning query languages?

DAPHNE MIEDEMA

- **Best poster award**
- Preliminary work for the ICPC'22 paper

2020

Alice and Eve '20