WIEGER PUNTER

Algorithm Engineer | Scalable Data Systems | Efficient Data Processing

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PROFESSIONAL EXPERIENCE

PhD in Data Stream Summarization

TU/e

Nov 2022 – Jan 2027 Eindhoven
Reference: O. Papapetrou o.papapetrou - at -tue.nl

- Developed compact, energy-efficient data structures that enable scalable analytics over high-volume data streams.
- Published in top-tier conferences and journals.
- Recognition by receiving the PVLDB Best Research Paper Award (2024), ACM SIGMOD Research Highlight Award (2025).
- Department Nominee for the EuroTech Rising Research Star Award (2026).
- Techniques integrated into industry systems and widely used open-source data management platforms, such as a PostgreSQL extension.

Leadership & Collaboration

- Co-organizer of the Lorentz Center workshop 'Sketching the Future', which will bring together leading academic and industry experts to shape a 10-year research agenda for streaming data systems.
- Collaborated within the Horizon Europe STELAR consortium to develop an AI-ready Knowledge Lake Management System integrating satellite, weather and agricultural data for downstream analytics including crop classification.
- Mentor of 5 MSc. students and 2 BSc. students on their thesis.
- Teaching assistant for courses in data management for 6 years.
- Presented research at international conferences and workshops such as VLDB, EDBT and the Dutch-Belgian database day.
- Peer reviewer for conferences/journals.

MSc. Internship

Arcadis

Fall 2021 – Winter 2021 's Hertogenbosch
Reference: C. Goorts cindy.goorts - at - arcadis.com

Designed and implemented a database system to monitor greenhouse gas emissions data of Dutch water boards for annual footprint assessments.

EDUCATION

MSc. Data Science in Engineering

TU/e

2020 – 2022 Eindhoven

- Courses on data management, machine learning, algorithms.
- Thesis: SQL Query Optimization using Machine Learning.

BSc. Data Science

TU/e & Tilburg University

2016 – 2020 Eindhoven, Tilburg

- Interdisciplinary study with courses spanning computer science, statistics, ethics, business and law.
- Thesis: Improving cardinality estimation of transitive closures in graphs.

TECHNICAL SKILLS

- **Programming:** Python, Java, SQL, C++
- **Data Management:** Algorithm design, distributed data processing, geospatial data streams
- **Data Science:** Machine Learning, Time-series analysis, multidimensional data analysis
- **Tools:** Git, Docker, Kubernetes, Spark, Kafka, Flink, HPC, Linux

PUBLICATIONS

OmniSketch: Multi-dimensional update stream analytics with arbitrary predicates.
Punter, W.R., Papapetrou, O., Garofalakis, M. (2026). The VLDB Journal, 35(1), 9. https://doi.org/10.1007/s00778-025-00960-6

OmniSketch: Streaming Data Analytics with Arbitrary Predicates.
Punter, W.R., Papapetrou, O., Garofalakis, M. (2025). SIGMOD Rec., 54(1), 28-35. https://doi.org/10.1145/3733620.3733627

Synopses for Summarizing Spatial Data Streams.
Kiezebrink, J.J.E., Punter, W.R., Papapetrou, O., Verbeek, K. (2025) EDBT:, 284-296. https://doi.org/10.48786/EDBT.2025.23

OmniSketch: Efficient Multi-Dimensional High-Velocity Stream Analytics with Arbitrary Predicates.
Punter, W.R., Papapetrou, O., Garofalakis, M. (2023). Proc. VLDB Endow., 17(3): 319-331. https://doi.org/10.14778/3632093.3632098

PERSONAL INTERESTS

Climbing, cycling and hiking
Playing violin and guitar