

Toward Building Sonia Horchidan, sfhor@kth.se **Reliable Hybrid Neural Graph Databases**



Design, implement, and test the first Hybrid Neural Graph Database System with support for trustworthy inferred results.

ML-Centric Query Customization

PREDICT (p:Person)-[r:REPRESENTS]->(t:Team)





Fine-grained customization of hybrid execution: inference-based (**PREDICT**) or traditional algorithmic execution (**MATCH**).

RETURN PREDICTED type(rr);



Middleware architecture: serves as a bridge between the application and the database, enhancing the capabilities of the DBMS with ML inference by intercepting user queries.

Hybrid Neural Graph Query Execution



Publications

[1] Horchidan, S. Query Optimization for Inference-Based Graph Databases. PhD @ VLDB 2023. [BEST PAPER AWARD 🕎]

[2] Horchidan, S. and Carbone, P. ORB: Empowering Graph Queries through Inference. DMKG @ ESWC 2023.

[3] Horchidan, S., Chen, P. H., Kritharakis, E., Carbone, P., & Kalavri, V. (2024). Crayfish: Navigating the Labyrinth of Machine Learning Inference in Stream Processing Systems. EDBT 2024.

[4] Horchidan, S., Kritharakis, E., Kalavri, V. and Carbone, P. Evaluating model serving strategies over streaming data. DEEM @ SIGMOD 2022. [BEST PAPER AWARD \mathbb{Y}] [BEST PRESENTATION AWARD \mathbb{Y}]



<u>Wallenberg</u> a

AUTONOMOUS SYSTEMS