

Seminar Data-Aware Processes

Knowledge-Based Systems Group

Stephan Mennicke

Wednesday

Encryption enabled

Messages in this room are end-to-end encrypted. When people join, you can verify them in their profile, just tap on their avatar.



Seminar Data-Aware Processes

You created this room. This is the start of Seminar Data-Aware Processes.
Add a topic to help people know what it is about.

Invite to this room

Matrix-Channel



Stephan Mennicke created and configured the room.

Masoud Taghikhah joined the room.



Stephan Mennicke

So the room works, at least for one of you. Welcomel

zisu300c joined the room.

hlngr joined the room.

...

Thursday

Friday

Yesterday

Today

Topic Selection

- A candidate seminar outline is provided after this slide
- References are mainly taken from the survey paper "Foundations of data-aware process analysis"
- Additional references are provided

- You can pick one of the provided topics (one bullet of one slide) or pick another reference
- Propose a short-list (2) of topics in the matrix chat
- The assignment of topics will be done via the matrix chat

Potential Seminar Structure

Diego Calvanese, Giuseppe De Giacomo, and Marco Montali. 2013. Foundations of data-aware process analysis: a database theory perspective. In Proceedings of the 32nd ACM SIGMOD-SIGACT-SIGAI symposium on Principles of database systems (PODS '13).

Relational Transducers

- Introduction, modeling, first analysis problems [19, 20]
- Analysis problems: details and complexity [19, 20]
- Verification of Relational Transducers [20, 114]

Artifact-Centric Systems

- Modeling [101]
- Verification [38]
- SMT-based Verification of Data-Aware Processes
 - D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin, "SMT-based verification of data-aware processes: a model-theoretic approach," *Math. Struct. Comp. Sci.*, vol. 30, no. 3, pp. 271-313, Mar. 2020, doi: [10.1017/S0960129520000067](https://doi.org/10.1017/S0960129520000067).

Data-Centric Dynamic Systems

- Introduction, Modeling, First Analysis Problems [24]
- Verification [24, 26]
- Soundness
 - M. Montali and D. Calvanese, "Soundness of data-aware, case-centric processes," *Int J Softw Tools Technol Transfer*, vol. 18, no. 5, pp. 535-558, Oct. 2016, doi: [10.1007/s10009-016-0417-2](https://doi.org/10.1007/s10009-016-0417-2).

DB-nets

- DB-nets: On the Marriage of Colored Petri Nets and Relational Databases
 - M. Montali and A. Rivkin, "DB-Nets: On the Marriage of Colored Petri Nets and Relational Databases," in *Transactions on Petri Nets and Other Models of Concurrency XII*, M. Koutny, J. Kleijn, and W. Penczek, Eds. Berlin, Heidelberg: Springer, 2017, pp. 91-118.
 - M. Montali and A. Rivkin, "From DB-nets to Coloured Petri Nets with Priorities (Extended Version)," *arXiv:1904.00058 [cs]*, Mar. 2019, Accessed: Jul. 23, 2020. [Online]. Available: <http://arxiv.org/abs/1904.00058>.

Additional Topics

- Knowledge and Action Bases:
 - Modeling, Analysis [25]
 - Handling Inconsistent Data
 - M. Raghothaman, J. Mendelson, D. Zhao, M. Naik, and B. Scholz, "Provenance-guided synthesis of Datalog programs," *Proc. ACM Program. Lang.*, vol. 4, no. POPL, p. 62:1–62:27, Dec. 2019, doi: [10.1145/3371130](https://doi.org/10.1145/3371130).
- Datalog Synthesis
 - M. Raghothaman, J. Mendelson, D. Zhao, M. Naik, and B. Scholz, "Provenance-guided synthesis of Datalog programs," *Proc. ACM Program. Lang.*, vol. 4, no. POPL, p. 62:1–62:27, Dec. 2019, doi: [10.1145/3371130](https://doi.org/10.1145/3371130).
- Overview Model Checking [122]