Project Meeting: TrackOpt

Sebastian Sachs, Christian Cierpka

Institute of Thermodynamics and Fluid Mechanics
Technische Universität Ilmenau, Germany

sebastian.sachs@tu-ilmenau.de

TrackOpt

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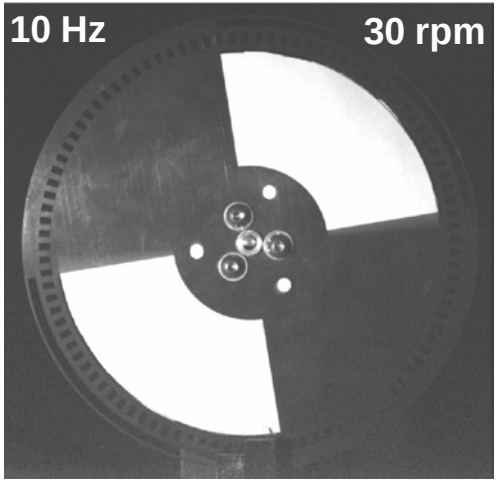
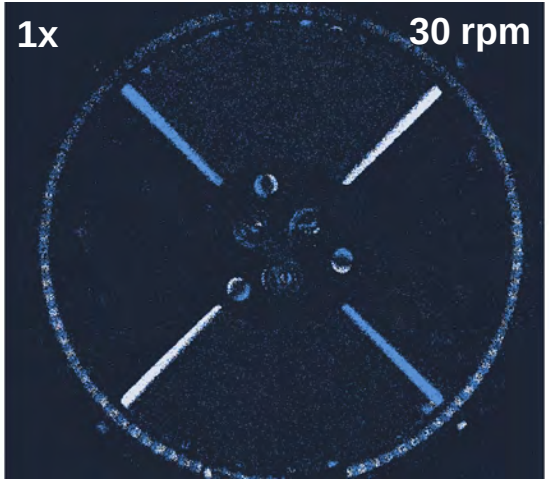
Event-based vision

frame-based



event-based



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Event-based vision

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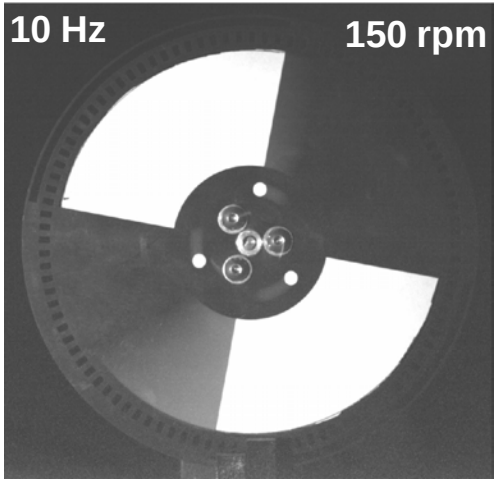
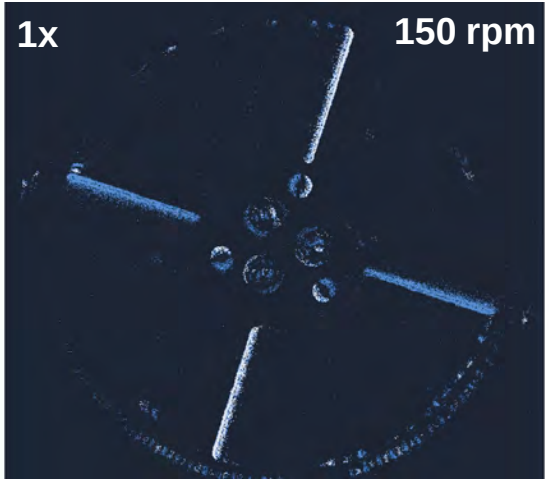


event-based



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Event-based vision

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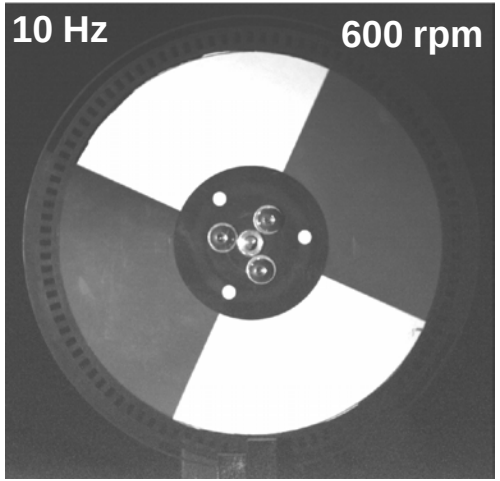

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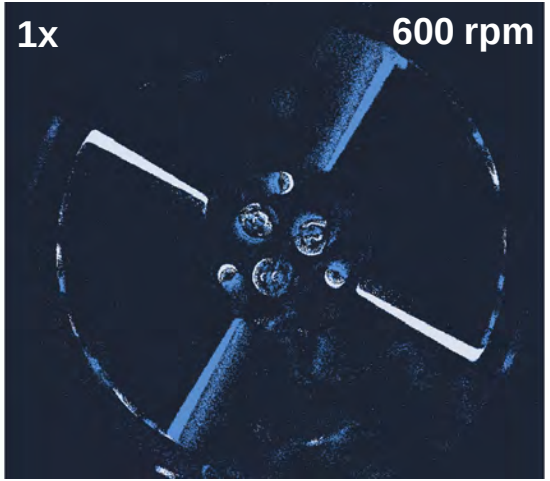

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Event-based vision

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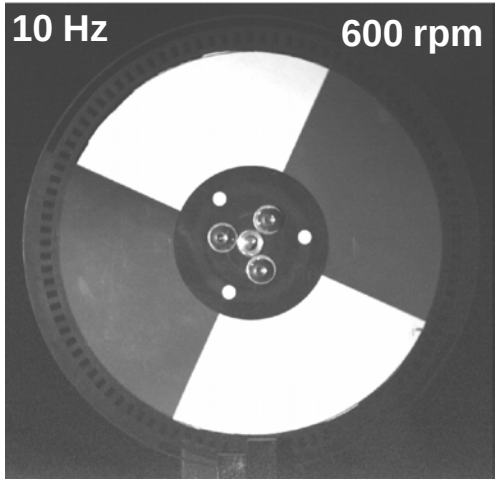
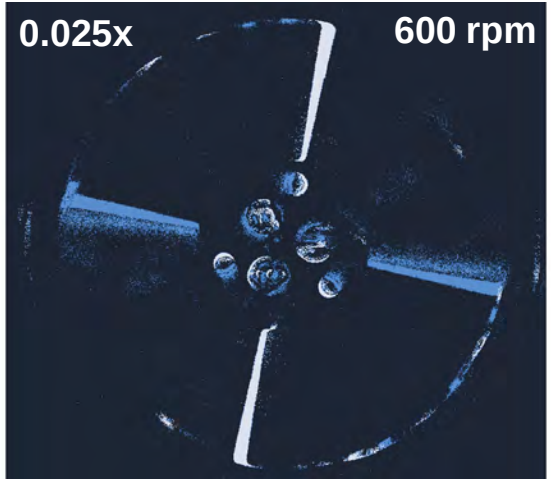


event-based



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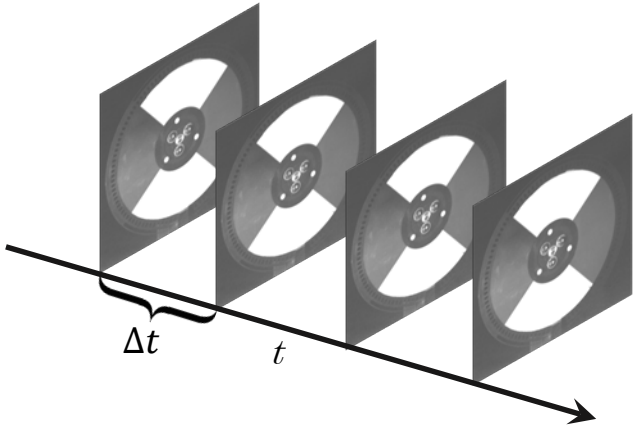
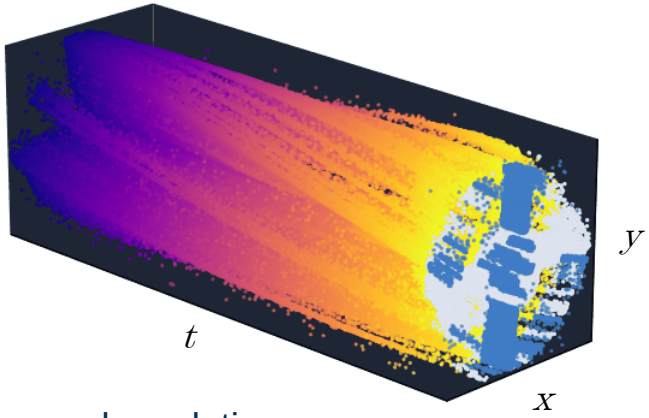
Event-based vision

frame-based



- fixed frame rate
- dense data
- rather expensive

event-based



- high temporal resolution
- asynchronous, spatiotemporally sparse event-stream
- high dynamic range
- cost- and energy efficient

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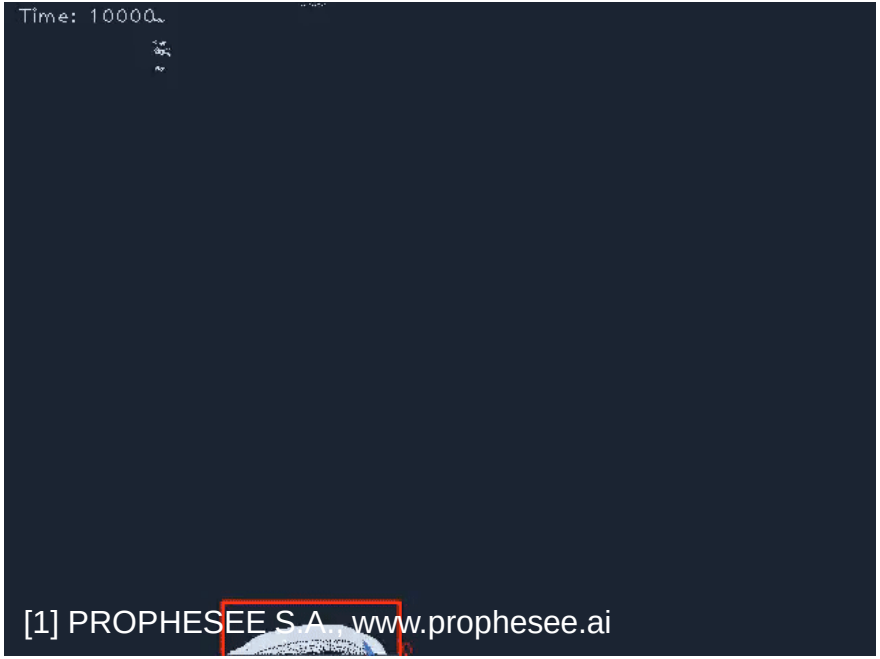
Event-based vision - examples

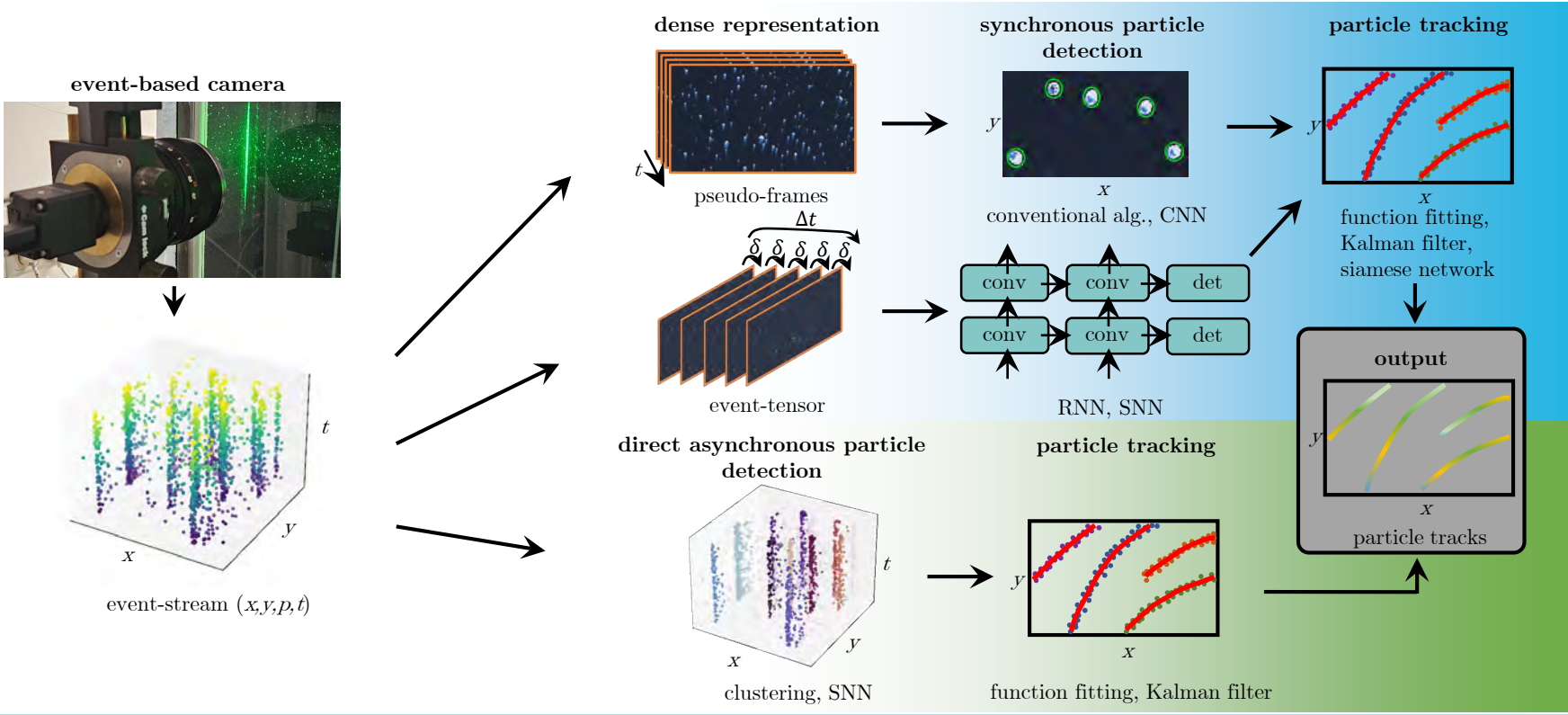


[1] PROPHESEE S.A., www.prophesee.ai

Event-based vision

[4] Rusch et al. (2023), Exp. Fluids 64 (8)

Data processing



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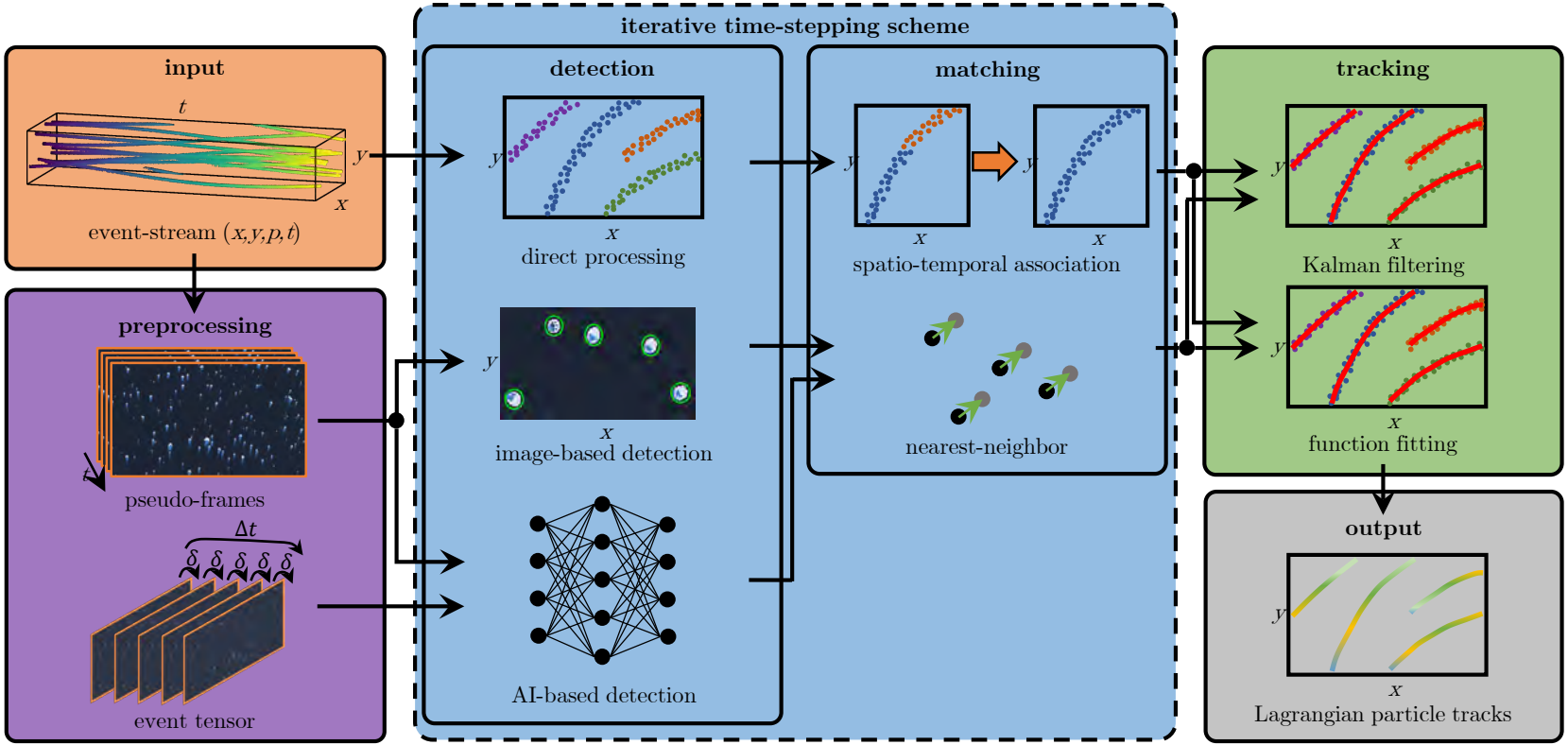
Framework STELLA



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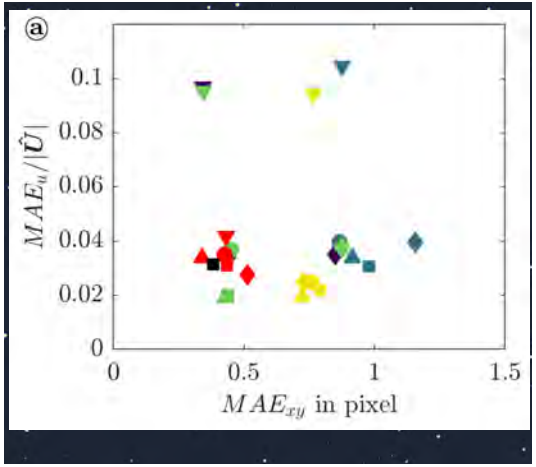
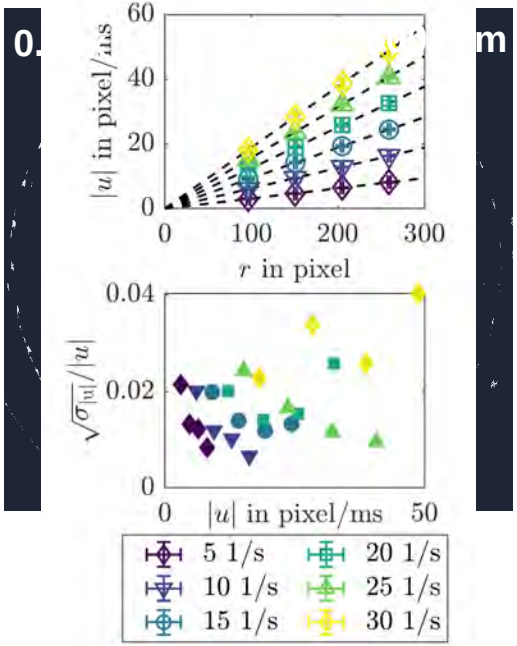
Datasets

synthetic

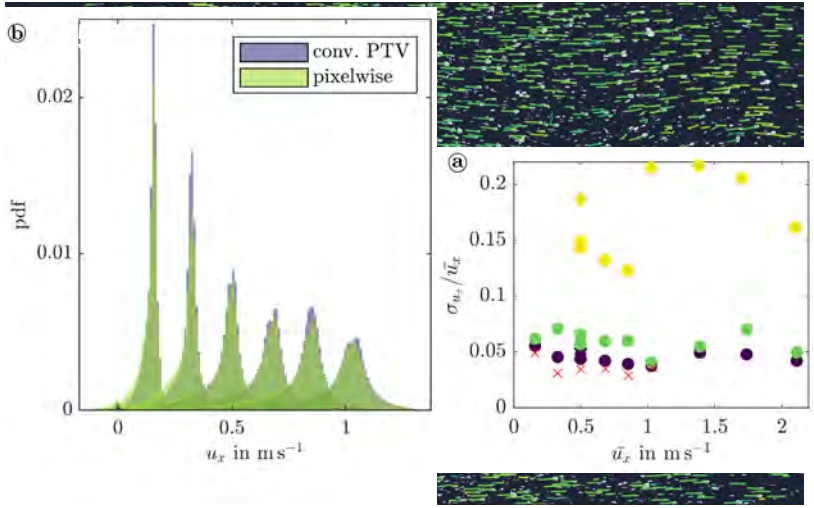


pixelwise, kd – tree, DBSCAN, pseudo, RVT, spline, Kalman, X^K, u^S, X^K, u^{KS}, X^{KS}, u^{KS}

experimental (I)



experimental (II)



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Conclusion

- collected synthetic and experimental **datasets**
- developed modular **framework** for particle tracking using event-based cameras
- **presented** at „ISPIV2025“ and „Fachtagung Experimentelle Strömungsmechanik“
- currently compiling **journal publication**

Outlook:

- tailored neural network architecture in strong collaboration with Prof. Margret Keuper

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