

Complex Event Recognition: Automata-based CER & Complex Event Forecasting

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Topics not covered

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- ▶ Uncertainty handling.
- ▶ Distributed & in-situ complex event processing.
- ▶ Machine learning for complex event processing.

Uncertainty handling

- ▶ Data vs pattern uncertainty.
- ▶ Probabilistic transition systems.
- ▶ Probabilistic graphical models.
- ▶ See [ASAP17].



Distributed complex event processing

- ▶ Increase throughput, decrease latency via distribution.
- ▶ Various solutions
 - ▶ Keep engine intact. Multiple workers, each with its own engine instance.
 - ▶ Modify engine. Distribute runs or automaton states.
- ▶ See [GAA⁺20].

Machine learning for complex event processing

- ▶ From a stream of input events and a set of labels, learn the definition for the pattern corresponding to these labels.
- ▶ Inductive Logic Programming, Probabilistic Graphical Models, etc.
- ▶ See [GAA⁺20].

References I

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-  Nikos Giatrakos, Elias Alevizos, Alexander Artikis, Antonios Deligiannakis, and Minos N. Garofalakis, *Complex event recognition in the big data era: a survey*, VLDB J. **29** (2020), no. 1, 313–352.