

# The Dissection of a Complex Event Recognition Engine

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## Abstract

Complex Event Recognition (CER) is a group of data management technologies that model data streams as sequences of events, where users are interested in recognizing complex events, namely, groups of events that represent critical situations in real life. Examples of complex events could include a fire detected by a sensor network in a nature reserve, an accident recognized by cameras in a smart city, or a critical social event in a social network. In these scenarios, event streams are generated continuously at high speed, and the importance of each event decays rapidly over time. To process them, a complex event recognition engine is a data management software that must efficiently process such data and alert on the presence of complex events in real time.

In this talk, we will present the dissection of CORE [1, 2], a novel complex event recognition engine. The dissection will cover all its internal components: starting with its architecture, we will examine its query language, stream and memory management, query optimization, query evaluation, and complex event outputting. We will focus on the technical solutions and challenges of a CER engine, from both theoretical [3, 4] and practical [1, 2] perspectives. In particular, based on our understanding of its components, we will review several open research problems and possible directions for future work in complex event recognition.

**2012 ACM Subject Classification** Information systems → Query optimization; Information systems → DBMS engine architectures; Information systems → Stream management; Theory of computation → Database theory; Theory of computation → Database query processing and optimization (theory)

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