



# Proposal bachelor thesis

**Title:** Modelling Event-based Applications on Relational Databases

**Promotor:** Elisa Gonzalez Boix

**Includes preparation course:** No

## Context

Rather than just being idle components connected to the internet, more and more devices are becoming both contributing and consuming components to newer event-based software systems hosted on the web. The applications on these devices send large amounts of data to servers which need to send feedback to clients almost instantaneously. An example is the traffic-sensing mobile app Waze. A device running Waze contributes speed and location changes and receives nearby traffic information changes as events in real-time. The current servers supporting these systems run relational databases in the back-end, which traditionally have limited support for such real-time, event-based interactions.

## Proposal bachelor thesis

The thesis will entail investigating the ability of current relational databases in supporting event-based systems. The student will partake in designing, implementing and testing a non-trivial event-based application for the web using an event-based server and a traditional relational database as a back-end. The application will involve clients sending and receiving a massive number of events to and from the server. e.g. a mobile device reporting changes in location data or orientation and receiving nearby traffic information displayed on a map. The point of focus will be on the features that different relational databases provide for event-based functionality: most databases employ the use of insert/update/delete triggers for this, but advanced systems support features such as *active rules*. A final phase will be to profile the performance of such a setup using a massive amount of incoming and outgoing events simulated from a number of clients and recording suitable metrics such as resident set size for memory consumption and activation times for processing time.

## Preparatory course bachelor thesis

None