Bachelor Thesis
GraphQL for the Internet of Things

Context
Over the past decade, Representational State Transfer (REST) has become the de facto standard for designing web APIs. It offers many advantages including statelessness and structured access to resources. In response to some observed issues with REST, specifically its tendency to underfetch or overfetch data and the fact that multiple requests are needed for some standard webpage use-cases, Facebook developed GraphQL [1], a new query language for APIs.

State of the Art & Problem
GraphQL has since proven to be popular among developers and emerged as a flexible client-centric data fetching alternative, especially in scenarios like mobile apps [2]. This has prompted discussions on whether a technology like GraphQL is a valid substitute or simply an extension to the REST architectural style [2]. This discussion is also relevant for the Internet of Things (IoT), where APIs serve as a means to communicate and interact with a number of “smart” devices.

Thesis Topic & Goal
Implement a prototype API in GraphQL (not wrapped) that mirrors the query functionality of an existing IoT-API, OpenSense.network [3]. Measure and discuss the suitability of GraphQL: For which IoT use-cases or workloads is GraphQL a good fit? When is REST the better option?

Skills:
Web-APIs, SQL (PostgreSQL), CQL (Cassandra)


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Our Mission:
Our lectures cover fundamental methods and techniques in the areas of service computing, cloud computing, and enterprise computing. We like to engage students in hands-on building of distributed information systems and to take an interdisciplinary approach to evaluating such systems. Through a close mentoring of students, especially in our seminars, we aim to introduce students to our ongoing research and to excite them to do future studies and research with us.