

Bachelor/Master Thesis

Systematic Classification and Evaluation of Oracle-Blockchain Systems

Context

Public blockchains like Ethereum provide a closed execution environment to guarantee deterministic computations across the blockchain network. Every node in the network needs access to the data required for a smart contract computation. To make external data available to on-chain computations, an additional service is required which is often referred to as an Oracle. Such Oracles serve requests from smart contracts by fetching data from external sources and feeding it to the blockchain.

Problem

In recent years, a variety of approaches to Oracle systems have been proposed making different assumptions and provide different tradeoffs and guarantees. However, no systematic classification exists which describes, compares, and evaluates Oracle systems.

Thesis Topic

The goal of this thesis is to systematically research and classify Oracle systems. As a first step, the existing approaches in academia and beyond need to be systematically explored and analyzed. Based on the findings, a model should be developed that allows to meaningfully classify the approaches. The resulting classification allows a comparison and an evaluation of the approaches.

Skills

The student is expected to have...

- ... good knowledge in distributed systems, preferentially blockchains.
- ... basic knowledge in cryptography.
- ... ability to understand complex systems.
- ... good reading and writing skills.

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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.