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Reasearch Interests & Skills

Distributed Systems
- Consensus, Replication, Fault tolerance, Availability, Key-Value-Stores, RDMA

Computer Architecture
- Consistency, Persistency, Parallelism, Memory Systems

Parallel Programming
- Language-level memory models

Software Engineering
- C, C++, Python, Linux

Hardware Design and Simualtion
- VHDL, Verilog, SystemC, Modelsim, Quartus



Education

Since 2017
University of
Edinburgh

Ph.D. in Computer Science

- Thesis: Enforcing Consistency in the Datacenter
- Advisor: Vijay Nagarajan; Secondary Advisor: Boris Grot
- Sponsored by ARM Centre of Excellence

2016-2017
University of
Edinburgh

M.Sc by research in Computer Science,

- Thesis: An RDMA-based skew-aware Key-Value Store
- Advisor: Vijay Nagarajan; Secondary Advisor: Boris Grot

2009-2015
DUTH University

B.Sc. & M.Sc. in Electrical & Computer Engineering

- Thesis: Heterogeneous links in VC-based Network-on-Chips
- Advisor: George Dimitrakopoulos

Projects & Publications

EuroSys '21
(to appear)

Odyssey: The Impact of Modern Hardware on Strongly-Consistent Replication Protocols

- Designed Odyssey, a framework tailored towards replication protocol implementation for multi-threaded, RDMA-enabled, in-memory KVSeS.
- Implemented and evaluated 10 protocols over Odyssey including Paxos, ZAB & Hermes.
- Characterized the space of strongly-consistent replication protocols and demonstrated the interplay between modern hardware and protocols.

PPoPP '20
Best paper
nominee

Kite: Efficient and Available Release Consistency for the Datacenter

- Designed Kite, the first highly-available, replicated Key-Value-Store that offers Release Consistency (and thus can be programmed similarly to C/C++11).
- Kite combines Eventual Store, ABD & Classic Paxos along with a novel fast/slow path mechanism to ensure high-performance in the absence of faults.
- Demonstrated the efficacy of Kite by porting three lock-free data structures and showing that Kite outperforms the competition.

EuroSys '18

Scale-out ccNUMA: Exploiting Skew with Strongly-Consistent Caching

- Designed a distributed, RDMA-enabled and multi-threaded Key-Value-Store that balances the load in the face of a skewed access pattern by symmetrically caching the most popular items in all nodes.
- Implemented two fully-distributed protocols to offer two flavours of consistency.

ASPLOS '20
Micro Top Picks
Honorable
Mention

Hermes: Fast and Reliable Data Replication with Linearizability

- Hermes is a fault-tolerant replication protocol that maximizes performane through its fully distributed nature
- Assisted in design space exploration, protocol design and the paper writing
- Designed an RDMA-based ZAB to serve as a baseline to compare against.

ASPLOS '20

Lazy Release Persistency

- A persistency model along with a microarchitectural technique that synergize with language-level memory models to ensure a consistent cut in the NVM after a crash
- Assisted in design space exploration, technique design and paper writing.

ATC '21
(submitted)

Avocado: A Secure In-Memory Distributed Storage System

- Avocado is a secure replicated Key-Value Store that leverages Intel SGX, RDMA and the ABD protocol to achieve security, performance and consistency.
- Assisted in design space exploration, advised on enforcing consistency and using RDMA

Work Experience

Since 2017

Teaching at University of Edinburgh,

- TA / Tutor / Marker & covering Lectures
- Classes: Computer Architecture, Introduction to Computer Systems
Parallel Architectures

2016

DSP engineer, Akya Limited, UK

- EDA tool design in C++