Sami ALABED

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🎓 EDUCATION

Oct 2019 — May 2023
University of Cambridge, *PhD. Computer Science* — Cambridge, UK
> Research topic on the optimization of Computer Systems with Bayesian optimization.
> Awarded funding from *The Alan Turing Institute*, the national institute for data science and AI.
> Awarded an *Honorary Cambridge Trust* scholarship.

Oct 2018 — Jun 2019
University of Cambridge, *MPhil. Advanced Computer Science* — Cambridge, UK
> Awarded *Cambridge Trust* & *Students of Cambridge* scholarships.
> Achieved a *Distinction* (80%) in a research master on optimizing large-scale systems using machine learning.

Sep 2014 — Jun 2018
The University of Manchester, *BSc. Computer Science with Industrial Experience* — Manchester, UK
> Awarded *Head of School Award* for an outstanding contribution to the life of the School of Computer Science.
> Consistently achieved *First Class* (80%) results in every year.
> Elected as the second-year students' representative.

💼 EXPERIENCE

Jul 2019 — Oct 2019
Twitter, *Software Engineer Intern - Events Quality* — London, UK
> Structured Twitter's event page by analyzing and classifying the perspective of tweets.
> Experimented with real-time clustering algorithm for detecting break-out events.

`Real-Time Clustering Algorithm` `Machine Learning` `Unsupervised Learning` `Scala`

Jun 2018 — Sep 2018
Twitter, *Software Engineer Intern - Live Video* — London, UK
> Reduced abuse in broadcasts chats by implementing a machine learning-based model to classify messages.
> Visualised the project's impact by designing MapReduce jobs to analyse data from multiple sources.

`Scala` `Go` `SQL` `AWS` `gCloud`

Jun 2017 — Sep 2017
Google, *Site Reliability Engineer Intern - Google Cloud* — London, UK
> Automated the detection of users anti-pattern usage of Cloud DataStore by designing a batch job running over petabytes of data.
> Improved site reliability engineers response time to escalations by producing notebooks to visualise anti-pattern usages.

`Python` `Golang` `SQL` `MapReduce` `gCloud` `SRE`

Jul 2016 — Jun 2017
Amazon, *Software Development Engineer - Prime Video* — London, UK
> Reduced costs incurred on our team by £2M through optimising our cluster's configurations and host types.
> Developed a low-latency tier-one micro-service responsible for PIN authentication workflow.
> Provided the BI team with real-time analysis by using Kinesis stream into our data warehouse.

`AWS` `Python` `Java` `Spring` `DevOps`

Sep 2015 — Jun 2018
The University of Manchester, *Student Assistant - School of Computer Science* — Manchester, UK
> Developed outreach activities using Drones and Oculus to teach programming in schools.
> Integrated the school's labs into AWS and Azure and produced lab manuals.

`Azure` `NodeJs` `OculusRift`

📖 PUBLICATIONS

2021 ✏ Conference
BoGraph : Structured Bayesian Optimization From Trace. — In Review
Sami Alabed, Eiko Yoneki. In review
> Structured Bayesian optimization with automated structure discovery from trace using Bayesian Network.
> BoGraph auto-tuned the co-design of a hardware accelerator and optimize the energy latency by $5.4x$.

`Causal Graph` `Bayesian Network` `Bayesian Optimization` `SoC optimization`

2021 ✏ Workshop
High-Dimensional Bayesian Optimization with Multi-Task Learning for RocksDB. — EuroMLSys21
Sami Alabed, Eiko Yoneki. ISBN : 9781450382984, DOI:10.1145/3437984.3458841
> Optimized RocksDB IO throughput by x1.3 in ten iterations beating the state-of-the-art by fifty iterations.
> Contributed a method that injects expert knowledge in a multi-task Gaussian Process.

`EuroSys` `Bayesian Optimization` `Multitask Gaussian Process` `System Optimization`

2019 ✏ Preprint
RLCache : Automated Cache Management Using Reinforcement Learning. — arXiv
Sami Alabed. arXiv:1909.13839
> Improved cache improved cache management decisions by 20% using a multi-agents RL that perfoms eviction, TTL estimation, and caching decisions.

`Reinforcement Learning` `Multi-agent Reinforcement Learning` `System Optimization`

💻 Selected Projects

🐧 Open Source Projects

Multi-Objective Bayesian optimization in Garbage Collector
Improved the read and write latency of Cassandra by 30% compared to baselines by tuning its garbage collector parameters. Constructed the Gaussian Process using ICM kernel to model the multi-task nature of the problem.

`PyTorch` `Bayesian Optimization` `Python`

Reinforcement Learning Cache Manager
Optimised cache utilisation by 20% by building a multi-task reinforcement learning powered cache manager to estimate time-to-live and make caching & eviction decision keys. Built a framework to model cache management as a reinforcement learning problem, the framework supported multi-agent and single agent implementations.

`GitHub` `Tensorflow` `Reinforcement Learning` `Python`

Method Name Prediction
Implemented a convolutional attention network to summarise Java source code and predict suitable method name based on a published research paper.

`GitHub` `Tensorflow` `Machine Learning` `Keras` `Python` `NLP` `CNN` `Attention`

EdgeComputing : IoT on The Edge
Reduced the IoT devices dependency on the cloud and improved their performance by building elastic and reliable edge network by using Docker containers.

`Docker` `Edge Computing` `Python` `FaaS` `IoT`

KalahAi : Boardgame bot
Developed a self-learning bot to play Mancala inspired by AlphaGo's paper.
Awarded highest score in term of speed and win rate against 13 other bots.

`GitHub` `Tensorflow` `Reinforcement Learning` `AlphaGo` `Python`

⚗️ Hackathons Projects

Genie : The smart chatbot for everyday services,
Hackathon : HackLondon, 2016
A chatbot written in NodeJs integrated with various online services to ease the process of purchasing online.
🏆**Awards :** JP Morgan's Hack Choice. `NodeJs` `Natural Language Processing`

MedReader,
Hackathon : AMEE Hackathon, 2015
Speed reading app using Java to ease the consumption of medical papers.
🏆**Awards :** First Place and the Best Use of Elsevier Data. `Java` `ElasticSearch`

Currency&Stock Offline Trader,
Hackathon : Warwick University Hackathon, 2014
Financial querying system to enable currency and stock exchange through SMS built using Java.
🏆**Awards :** Best use of Bloomberg API. `Java` `SMS`

👥 Leadership

Sep 2017 Jun 2018	Peer Assisted Study Session, *PASS2 Coordinator*	Manchester, UK
	› Awarded *Outstanding Contribution to Peer Support* award.	
	› Improved the employability of students by running interview preparation, industry talks, and CV workshops.	
Sep 2015 Jun 2016	Microsoft - DevEvangelist, *Student Partner*	Manchester, UK
	› Ranked in the top five Microsoft student partners in impact on Software Development, and Leadership.	
	› Increased the adaptability of Microsoft's development tools and cloud services by hosting training workshops.	
Sep 2015 Jun 2016	HackSoc MCR, *Co-Founder*	Manchester, UK
	› Ran HackSoc focusing on hackathons and tech workshops and won the EU student hackathon league twice.	
	› Managed a team of 30 students to raise sponsorship for a total of £65,000 and co-organised seven hackathons.	

📑 Teaching

Research projects	Model-based Reinforcement Learning in Optimizing Deep Learning Graphs (2019-20). Auto-tuning Spark with Directed Acylic Graph Models in Bayesian Optimization (2019-20).
Developing Labs	Large-Scale Data Processing and Optimization, Data Science.
Courses Supervision	Concurrent and Distributed systems, Data Science, Machine Learning and Bayesian Inference.
Tutorials	Large-Scale Data Processing and Optimization.