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EDUCATION	Stony Brook University , Stony Brook, NY USA <i>Ph.D., Computer Science</i> 01/2017–12/2022 <ul style="list-style-type: none">• Advisor: Prof. Erez Zadok• Operating Systems, File Systems, Storage Systems & Architecture• Thesis: Using Machine Learning to Improve Operating Systems' I/O Subsystems
	Ozyegin University , Istanbul, Turkey <i>Master of Science, Computer Science</i> 02/2011–10/2014 <ul style="list-style-type: none">• Advisor: Prof. T. Barış Aktemur• Compiler Optimization• Thesis: Performance Evaluation of Unfolded Sparse Matrix-Vector Multiplication
	Ege University , Izmir, Turkey <i>Bachelor of Engineering, Computer Engineering</i> 09/2005–06/2009 <ul style="list-style-type: none">• Advisors: Prof. Aylin Kantarcı, Prof. Kasım Sinan Yıldırım• Senior Project: Operating System For Wireless Sensor Networks : SIMIT
PUBLICATIONS	[1] Ibrahim “Umit” Akgun, Ali Selman Aydin, Andrew Burford, Michael McNeill, Michael Arkhangelskiy, and Erez Zadok. Improving storage systems using machine learning. <i>ACM Transactions on Storage (TOS)</i> , 19(1):1–30, Jan 2023. [2] Ibrahim “Umit” Akgun, Santiago Vargas, Michael Arkhangelskiy, Andrew Burford, Michael McNeill, Aruna Balasubramanian, Anshul Gandhi, and Erez Zadok. Predicting network buffer capacity for bbr fairness. In <i>NeurIPS MLSys Workshop</i> , Dec 2022. [3] Ibrahim Umit Akgun, Ali Selman Aydin, Aadil Shaikh, Lukas Velikov, Andrew Burford, Michael McNeill, Michael Arkhangelskiy, and Erez Zadok. Kml: Using machine learning to improve storage systems. <i>CoRR</i> , abs/2111.11554, 2021. [4] Ibrahim Umit Akgun, Ali Selman Aydin, Aadil Shaikh, Lukas Velikov, and Erez Zadok. A machine learning framework to improve storage system performance. In <i>HotStorage '21: Proceedings of the 13th ACM Workshop on Hot Topics in Storage</i> , Virtual, July 2021. ACM. [5] Ibrahim Umit Akgun, Geoff Kuenning, and Erez Zadok. Re-animator: Versatile high-fidelity storage-system tracing and replaying. In <i>Proceedings of the 13th ACM International Systems and Storage Conference (SYSTOR '20)</i> , Haifa, Israel, June 2020. ACM. [6] Ibrahim Umit Akgun, Ali Selman Aydin, and Erez Zadok. KMLib: Towards machine learning for operating systems. In <i>Proceedings of the 2020 On-Device Intelligence Workshop, co-located with the MLSys Conference</i> , February 2020.
ACADEMIC ACTIVITIES	Program Committees: EuroSys'24, SYSTOR'24 🌐 https://scholar.google.com/citations?user=8fL2kW0AAAAJ&hl=en
PROFESSIONAL EXPERIENCE	Google LLC , Sunnyvale CA <i>Software Engineer (Embedded Systems)</i> 04/2023– <ul style="list-style-type: none">• I work on Google's Tensor Processing Unit(TPU) machine learning hardware accelerators. MathWorks Inc. , Natick MA <i>Senior Software Engineer (Compilers, C++)</i> 01/2023–04/2023 <ul style="list-style-type: none">• I am part of the Compiler team and working on Matlab Dynamic Code Execution. Meta Platforms Inc. , Menlo Park CA - Remote from NY <i>Software Engineer Intern (Distributed Systems, C++)</i> 06/2021–08/2021 <ul style="list-style-type: none">• I have worked on ZippyDB which is a distributed key-value store. VMware Inc. , Palo Alto CA <i>Research and Development Intern (Distributed File Systems - Optimization)</i> 06/2019–08/2019 <ul style="list-style-type: none">• Developed a black-box configuration optimization framework for the distributed storage system.• Improved the benchmark running process and reduced the time 5×

Datrium Inc., Sunnyvale CA*MTS File System Intern (File Systems - C, C++)*

05/2018–08/2018

- Worked on NTFS file system structure and file system indexing.
- Integrated file system indexing feature to distribute file system infrastructure efficiently.

Huawei R&D Center, Istanbul*Software Engineer (iOS Development - Swift)*

09/2016–01/2017

- Designed IPTV mobile project infrastructure and implemented video listing/showing pages and application-wise caching system.
- Helped the mobile team to switch IPTV project infrastructure to Swift language.

ING Bank, Istanbul*Software Engineer (iOS Development - Swift)*

08/2014–11/2015

- Led iOS team, which consists of four developers, for developing new ING Mobile(Swift).
- Designed and implemented a security framework for mobile financial applications.
- Helped develop the ParaMara application and implemented money receive and other features.

SIEMENS, Istanbul*Software Engineer (Embedded Systems and Real-time Frameworks - C, C++)*

05/2013–08/2014

- Helped to develop the new version of the Software PLC (WinAC 1500 - S7-1500) framework and implemented and integrated one of the critical features (Open User Communication - OUC), which allows PLC to communicate with any other device via the network.
- Participated in a software architecture group and helped to design multi-threaded network software.

TUBITAK (The Scientific and Technological Research Council of Turkey), Istanbul*Software Engineer (Realtime Embedded Systems and Operating Systems - C, C++)*

09/2010–05/2013

- We developed a real-time operating system for avionics systems designed and implemented from scratch. I was part of the core team responsible for every fundamental part of the operating system (VM, Scheduling, Task Management, IPC, etc.).
- Designed and implemented thread/task manager, virtual memory, and kernel data structures; also, for preparing the system for multicore, I implemented lock-free data structures.
- Led two software developers in implementing network drivers and testing the operating system.

IBM, Istanbul*UNIX/Linux System Administrator*

08/2009–09/2010

- I was UNIX/Linux administration for IBM Global Services. I have worked on management of SAP and DB2. In addition, I also worked on database backup recovery operations.

SKILLS*Programming skills are sorted according to familiarity level*

- *Fluent:* C, C++, Python, Swift
- *Languages that I have used:* Java, Scala, Haskell, Rust, Bash, \LaTeX , Zsh
- *Assembly:* i386, x86/64(SIMD), RISC-V, PowerPC

TEACHING

CSE114 Computer Science I

Spring 2017

EXPERIENCE

CSE506 Operating Systems

Fall 2017

HONORS,

Stony Brook University, Full Scholarship / Research Assistanship

2011-2014

AWARDS

Ozyegin University, Full Tuition Scholarship

2011-2014

I entered top 0.005 students in Turkish University Entrance Exam

2005

PROJECTS**KML: Machine Learning Framework for Operating Systems (FSL Lab)**

Fall 2019-

KML is a lightweight yet efficient ML engine targeting kernel space components.

📄 <https://github.com/sbu-fsl/kernel-ml> 216 ★ 24 📄📄 <https://insidebigdata.com/2021/12/17/best-of-arxiv-org-for-ai-machine-learning-and-deep-learning-november-2021/>**System call tracing/replaying (FSL Lab)**

Fall 2017-2019

The System call tracing/replaying project is about capturing and replaying system calls accurately.

ARGUS (COMPAS Lab) - Hardware/Software Interaction

Summer 2017

The Argus project is about hardware acceleration for deep learning neural network applications.