

Curriculum Vitae

Shai Aviram Bergman

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TIMELINE

WORK EXPERIENCE:

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| <p>Chief Architect – Advanced Technologies – <i>Stealth Startup, Haifa, IL</i></p> <ul style="list-style-type: none"> • CXL + Linux (research, architecture, and development). • Hands-on work of realizing new technological potentials with CXL and memory pooling. | 11/2022-Present |
| <p>Lecturer, TA & Research Student – <i>The Technion, Haifa, IL</i></p> <ul style="list-style-type: none"> • Lecturer in “Structure of Operating Systems” course at the Technion. • TA in “Structure of Operating Systems” Course. TA in charge. • Research student in the subject of Accelerated Computing Systems: Accelerator research, disaggregated memory, memory tiering, virtualization, and SSDs. | 09/2013-03/2023 |
| <p>Visiting PhD Student – <i>Imperial College London, London, UK</i></p> <ul style="list-style-type: none"> • Virtualization research – defining new software and hardware architectures for efficient and secure virtualization techniques by utilizing new confidential computing technologies. Worked with Prof. Peter Pietzuch and Prof. Lluís Vilanova. • Hands-on work on Linux + x86_64 memory subsystem paravirtualization (KVM, QEMU). | 03/2022-06/2022 |
| <p>Software Architect Innovation Team - Consultant – <i>Toga Networks, Haifa, IL</i></p> <ul style="list-style-type: none"> • Hardware and software architecture of next-gen RDMA NICs – enabling efficient data movement between the host and NIC without memory pinning requirements. | 02/2020-09/2021 |
| <p>Software Architect Innovation Team - Internship – <i>Toga Networks, Haifa, IL</i></p> <ul style="list-style-type: none"> • Linux Kernel development in mm subsystem – realizing new techniques for data mapping and movement between different processes within HPC systems. | 08/2019-11/2019 |
| <p>Software Engineer Runtime Team – Research Collab. – <i>LogicBlox, Berkeley, CA, US</i></p> <ul style="list-style-type: none"> • Vectorization implementation and optimization on relational DBMS. | 08/2016-11/2016 |
| <p>Co-Op Engineer Innovation Team - Internship – <i>AMD, Tel Aviv, IL</i></p> <ul style="list-style-type: none"> • Linux and GPGPU development. Research on transparent P2P data movement between SSDs and GPUs (SSG), while maintaining POSIX file semantics in the kernel. | 08/2015-11/2015 |
| <p>VoIP, Systems & Web Application Developer – <i>Voicelinx.com, London, UK</i></p> <ul style="list-style-type: none"> • Developed cloud-hosted PBX server (Virtual Voice Over IP Server). • Linux kernel programming (modules for Linux based VoIP Server) | 02/2010-10/2015 |
| <p>Service In the Israel Defense Forces (IDF) - Israel</p> <ul style="list-style-type: none"> • Rank: Staff Sergeant. • Paratroopers unit – head network admin + data management. | 08/2007-08/2010 |

EDUCATION:

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| <p>Technion – Israel Institute of Technology – <i>Haifa IL</i></p> <ul style="list-style-type: none"> • PhD, Electrical and Computer Engineering. Thesis title: “Memory Management for Emerging Memory Technologies in Future Data-Centers”. | 02/2017-09/2022 |
| <p>Technion – Israel Institute of Technology – <i>Haifa IL</i></p> <ul style="list-style-type: none"> • M.Sc., Electrical and Computer Engineering. Thesis title: “High Performance Disk I/O on GPUs”. • Cum Laude; student grade: Thesis: 95%, Courses: 96.7%. | 03/2015-03/2017 |
| <p>Technion – Israel Institute of Technology – <i>Haifa IL</i></p> <ul style="list-style-type: none"> • B.Sc. degree in Electrical and Computer Engineering. Specializing in Computers (Hardware & Software), and Networks. • Cum Laude; student grade: Avg. 90.2%. | 03/2011-03/2015 |
| <p>Open University – <i>Tel Aviv / Jerusalem IL</i></p> <ul style="list-style-type: none"> • Studied whilst still in the army to advance my studies in the Technion by a year. • Student Grade Avg. 93.3% | 03/2009-08/2010 |

SKILLS AND TECHNOLOGIES

- Highly experienced in C, Linux kernel development (emphasis on mm, block, KVM, and nvme), QEMU, Python, Bash, and CUDA.
- Experience in C++, Android Development, Java, Javascript, AJAX & CSS.

PUBLICATIONS

- *S. Bergman*, M. Silberstein, T. Shinagawa, P. Pietzuch, L. Vilanova. Translation Pass-Through for Near-Native Paging Performance in VMs. USENIX Annual Technical Conference (USENIX ATC). 2023.
- *S. Bergman*, N. Cassel, M. Bjørling, M. Silberstein. ZNSwap: un-Block your Swap. USENIX Annual Technical Conference (ACM TOS). 2023.
- *S. Bergman*, N. Cassel, M. Bjørling, M. Silberstein. ZNSwap: un-Block your Swap. USENIX Annual Technical Conference (USENIX ATC). 2022.
- *S. Bergman*, P. Faldu, B. Grot, L. Vilanova, M. Silberstein. Reconsidering OS memory optimizations in the presence of disaggregated memory. International Symposium on Memory Management (ISMM). 2022.
- L. Vilanova, L. Maudlej, *S. Bergman*, T. Miemietz, M. Hille, N. Asmussen, M. Roitzsch, H. Härtig, M. Silberstein. Slashing the disaggregation tax in heterogeneous data centers with FractOS. European Conference on Computer Systems (EuroSys). 2022.
- *S. Bergman*, T. Brokhman, M. Silberstein. SPIN: Seamless Operating System Integration of Peer-to-Peer DMA Between SSDs and GPUs. ACM TOCS. 2019.
- S. Shahar, *S. Bergman*, M. Silberstein. ActivePointers: Software Address Translation on GPUs. ACM SIGOPS Operating Systems Review. 2018.
- *S. Bergman*, T. Brokhman, M. Silberstein. SPIN: Seamless Operating System Integration of Peer-to-Peer DMA Between SSDs and GPUs. USENIX Annual Technical Conference (USENIX ATC). 2017.
- S. Shahar, *S. Bergman*, M. Silberstein. ActivePointers: Software Address Translation on GPUs. International Symposium on Computer Architectures (ISCA). 2016.

PATENTS

- Devices and Methods for Remote Direct Memory Access (WO2022156902A1): Ben-Shahar BELKAR, David GANOR, Amit GERON, Shai BERGMAN. 2022.
- Method and system for direct memory access (WO2021239230A1): Ben-Shahar BELKAR, Alex Margolin Shai BERGMAN, Ronen Hyatt, Danny VOLKIND, Lior Khermosh, Tanya BROKHMAN. 2021.
- Method and system for direct memory access (WO2021239228A1): Ben-Shahar BELKAR, Alex Margolin, Shai BERGMAN, Ronen Hyatt, Danny VOLKIND, Lior Khermosh, Tanya BROKHMAN. 2021.

LANGUAGES

- Hebrew – fluent.
- English – fluent.

AWARDS

- 1st place Mellanox BlueField Hackathon (2019).
- Technion – Outstanding TA 2019 (Winter).
- Technion – Outstanding TA 2018 (Spring).
- Technion – Outstanding TA 2018 (Winter).
- Technion – Outstanding TA 2017 (Spring).
- Technion – Outstanding TA 2016 (Spring).
- Technion – M.Sc. in Electrical Engineering Cum Laude.
- Technion – B.Sc. in Electrical Engineering Cum Laude.
- Technion – President's list 2015.
- Certificate of Excellence from the Dean – Open University 2010.