Curriculum Vitae

Shai Aviram Bergman

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TIMELINE

WORK EXPERIENCE:

Chief Architect – Advanced Technologies – *Stealth Startup, Haifa, IL*   **2022-Present**
- CXL + Linux (research, architecture, and development).
- Hands-on work of realizing new technological potentials with CXL and memory pooling.

Lecturer, TA & Research Student – *The Technion, Haifa, IL*   **2013-2023**
- 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.

Visiting PhD Student – *Imperial College London, London, UK*   **2022**
- 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. Lluis Vilanova.
- Hands-on work on Linux + x86_64 memory subsystem paravirtualization (KVM, QEMU).

Software Architect Innovation Team - Consultant – *Toga Networks, Haifa, IL*   **2020-2021**
- Hardware and software architecture of next-gen RDMA NICs – enabling efficient data movement between the host and NIC without memory pinning requirements.

Software Architect Innovation Team - Internship – *Toga Networks, Haifa, IL*   **2019**
- Linux Kernel development in mm subsystem – realizing new techniques for data mapping and movement between different processes within HPC systems.

Software Engineer Runtime Team – Research Collab. – *LogicBlox, Berkeley, CA, US*   **2016**
- Vectorization implementation and optimization on relational DBMS.

Co-Op Engineer Innovation Team - Internship – *AMD, Tel Aviv, IL*   **2015**
- Linux and GPGPU development. Research on transparent P2P data movement between SSDs and GPUs (SSG), while maintaining POSIX file semantics in the kernel.

VoIP, Systems & Web Application Developer – *Voicelinx.com, London, UK*   **2010-2015**
- Developed cloud-hosted PBX server (Virtual Voice Over IP Server).
- Linux kernel programming (modules for Linux based VoIP Server)

CRM Developer & DB Admin – *David Publishers, Mevasseret Zion, IL*   **2009-2012**

Service In the Israel Defense Forces (IDF) - *Israel*   **2007-2010**
- Rank: Staff Sergeant.
- Paratroopers unit – head network admin + data management.

EDUCATION:

Technion – Israel Institute of Technology – *Haifa IL*   **2017-2022**
- PhD, Electrical and Computer Engineering.
  Thesis title: "Memory Management for Emerging Memory Technologies in Future Data-Centers".

Technion – Israel Institute of Technology – *Haifa IL*   **2015-2017**
- M.Sc., Electrical and Computer Engineering.
  Thesis title: "High Performance Disk I/O on GPUs".
- Cum Laude; student grade: Thesis: 95%, Courses: 96.7%.

Technion – Israel Institute of Technology – *Haifa IL*   **2011-2015**
- B.Sc. degree in Electrical and Computer Engineering.
  Specializing in Computers (Hardware & Software), and Networks.
- Cum Laude; student grade: Avg. 90.2%.

Open University – *Tel Aviv / Jerusalem IL*   **2009-2010**
- Studied whilst still in the army to advance my studies in the Technion by a year.
- Student Grade Avg. 93.3%

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

- Submission to ATC 2023: *S. Bergman*, M. Silberstein, T. Shinagawa, P. Pietzuch, L. Vilanova. Translation Pass-Through for Near-Native Paging Performance in VMs.
- *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. 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. ACM SIGOPS Operating Systems Review. 2018.
- 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.