Roman Kaplan - Resume

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EDUCATION

PhD Candidate in Electrical Engineering, Technion, Israel.   May 2016 – Q3 2019 (expected)
Advisor: Prof. Ran Ginosar
Research topic: Accelerator Architecture for Machine Learning and Bioinformatics

M.Sc. in Electrical Engineering, Technion, Israel.   May 2016
Advisor: Prof. Ran Ginosar
Thesis title: Accelerating Sparse Matrix-Vector Multiplication Using Compression on the Plural Many-Core Architecture

B.Sc. in Computer Engineering, Technion, Israel.   Sep 2009

PUBLICATIONS

1. **Roman Kaplan**, Leonid Yavits, and Ran Ginosar, "*PRINS: PRocessing-in-Storage Acceleration of Machine Learning*," IEEE Transactions on Nanotechnology, Vol. 17, no. 5, pp. 889-896, 2018.

2. Leonid Yavits, **Roman Kaplan**, and Ran Ginosar, "*Enabling Full Associativity with Memristive Address Decoder*," IEEE Micro Special Issue on Memristors, vol. 38, no. 5, pp. 32-40, 2018.

3. Tzoof Hemed, Nitai Lavie, and **Roman Kaplan**, "Distributed Deep Learning on Wimpy Smartphone Nodes," (in press) IEEE International Conference on the Science of Electrical Engineering, 2018.

4. **Roman Kaplan**, Leonid Yavits, Ran Ginosar and Uri Weiser, "*A Resistive CAM Processing-in-Storage Architecture for DNA Sequence Alignment*," IEEE Micro Special Issue on Architectures for the Post Moore Era, vol. 37, no. 4, pp. 20-28, 2017.

5. **Roman Kaplan**, Leonid Yavits, and Ran Ginosar, "*From Processing-in-Memory to Processing-in-Storage*," Journal of Supercomputing Frontiers and Innovations, vol. 4, no. 3, pp. 99-116, 2017.

6. **Roman Kaplan**, Leonid Yavits, Amir Morad, and Ran Ginosar, "*Deduplication in Resistive Content Addressable Memory Based Solid State Drive*," 26th Power and Timing Modeling, Optimization and Simulation, pp. 100-106, 2016.

   Submitted Papers (in Review)

1. **Roman Kaplan**, Leonid Yavits, and Ran Ginosar, "BioSEAL: In-Memory Biological Sequence Alignment Accelerator for Large-Scale Genomic Data," IEEE Transactions on Parallel and Distributed Systems.

2. **Roman Kaplan**, Leonid Yavits, and Ran Ginosar, "RASSA: Resistive Accelerator for Approximate Long Read DNA Mapping," IEEE Micro Special Issue on Emerging Memory Technologies.

3. Leonid Yavits, **Roman Kaplan**, and Ran Ginosar, "GIRAF: General purpose In-storage Resistive Associative Framework," IEEE Transactions on Computers.

AWARDS

1. SC 2018 ACM Student Research Competition 2nd place (silver medal) – Nov 2018
2. ISC HPC 2017 Research Poster Award Winner in *Architectures and Networks* category – Jun 2017
3. PACT 2016 ACM Student Research Competition Award (gold medal) – Sep 2016
4. Outstanding teaching assistant awards – W2015/16, S2016, W2016/17, W2017/18

JOB EXPERIENCE

Research Intern, Artificial Intelligence Product Group (AIPG), Intel Corporation, Haifa, Israel.
Jul 2018–Oct 2018
- Participate in the microarchitecture design of Ocean Hill AI accelerator for data centers.
- Provide insights and detect bottlenecks from convolutional neural network workload analysis.

Senior Software Engineer, IDF Navy.   Aug 2012–May 2014
- Research performance-flexibility tradeoffs for novel inter-process communication infrastructure (IPC) libraries.
- Design performance benchmarks for IPC and in-memory database infrastructure replacement products.

Software Engineer, IDF Navy.   Sep 2009–Aug 2012
- Coordinate communication protocols with external systems.
- Implement and integrate interfaces with external systems.
- Experience with C, C++, python, bash scripting.

TEACHING

Head Teaching Assistant: *Introduction to Data Structures and Algorithms*.
W2014/15 – present
- Head teaching assistant since Oct 2015.
- 1-2 weekly class hours of up to 80 students, manage course logistics, compile and grade exams.

Teaching Assistant: *Parallel Computing Architecture*.   W2016/17
- Taught the introduction to deep learning and convolutional neural networks.
- Designed deep learning inference benchmark on a many core architecture.

Head Teaching Assistant: *Introduction to Faculty Research*.   S2017, S2018
- Formulate class format and grade student final assignments, coordinating faculty talks.

Undergraduate Projects Advisor, Software Systems Lab.   W2014/15 – present
- Supervised over 30 projects in total.
- Project topics include: asynchronous parallel deep learning training, "classic" machine learning, cryptocurrency mining and web crawling on android, full stack android system.