Michael Borokhovich   512-293-1978   michaelbor@gmail.com

Experienced Software Engineer and Researcher with PhD degree. Designed, developed and operated network infrastructure software in production at scale. Multiple highly cited publications in the areas of software-defined networks (SDN), distributed algorithms, optimization, and large graphs analytics. Thrilled to solve complex practical and theoretical problems and make systems more efficient and robust.

Experience

Software Engineer, Amazon (AWS), US, California (2018-present)
- Built Traffic Engineering application and SDN controller for AWS Networking.
    - The system allowed CapEx saving of network infrastructure by optimizing its usage.
    - Designed and implemented traffic optimization approach based on Linear Programming.
    - Designed and implemented high-availability aspect of the system.

Senior Inventive Scientist, AT&T Labs-Research, US, New Jersey (2015-2018)
- ONAP (Open Network Automation Platform www.onap.org)
    - **Policy**. Designed and developed control loop policies for network automation. Worked on high level policy abstractions and low level implementation (BRMS Drools, XACML).
    - **Safety**. Built a framework for run-time protection from harmful automation actions.
    - **Open-source, DevOps**. Developed a framework for automatic ONAP deployment on a cloud platform for Open-sourcing.
    - **NFV (Network Functions Virtualization).** Built demo use cases for ONAP Open-sourcing: virtual firewall and virtual load balancer. For each use case: created VNFs, heat templates, initialization scripts and ONAP control loop policies.
- Metro network SDN
    - **SDN (Software Defined Networks)**. Built a prototype of SDN multilayer network (WDM, OTN, Ethernet) that automatically corrected path diversity violations.

Postdoctoral Fellow, The University of Texas at Austin, US, Texas (2014-2015)
- Large graph analytics algorithms for graph engines
    - Designed communication-efficient algorithms for PageRank and subgraph counting.
    - Modified existing GraphLab platform to support the communication-efficient approach.

Lecturer, Teaching Assistant, **Lab Instructor,** Ben-Gurion University, Israel (2007-2013)
- Computer networks (Lectures, Lab).
    - For this course, **designed and developed Virtual Computer Networks Lab based on Xen**. The Lab was successfully used by hundreds of students for 7 years.
- Information Theory and Signal Processing (Teaching Assistant).

Research Intern, Telekom Innovation Laboratories (T-Labs) Berlin, Germany (2012)
- Software Defined Networks (SDN) - "Fast failover" in OpenFlow

Software Engineer, VocalTec, Israel (2005-2007)
- Worked in VoIP Gateway project. Developed in C, Linux embedded, Real time environment.
- Developed drivers on Intel IXP2350 Xscale CPU and microcode for network processor.

Skills

- Java, C/C++, Python, Bash	- Communication and routing protocols (TCP/IP, RIP, OSPF, BGP)
- Socket programming	
- OpenStack, OpenDaylight, ONAP	- SDN, OpenFlow, NFV
- Virtualization	- Linux embedded, Kernel drivers
- Network processors	- Machine learning

Education

Ph.D., Communication Systems Engineering (2013).
M.Sc., Communication Systems Engineering (Summa Cum Laude, 2009).
B.Sc., Communication Systems Engineering (Cum Laude, 2005).
Ben-Gurion University of the Negev, Israel.
Ph.D. thesis: Software Defined Networks, Failover in OpenFlow, Optimization.
M.Sc. thesis: Distributed Algorithms for Information Spreading.
Undergrad project: Traffic Generator Implementation on EZchip Network Processor.

Awards

- Excellence in Teaching Award, Ben-Gurion University (2010)
- CISCO Award for Excellence in Research and Studies (2009)

Selected Publications (Citations: https://scholar.google.com/citations?user=dGV14RsAAAAJ)

R. Sedar, M. Borokhovich, M. Chiesa, G. Antichi, S. Schmid.
Supporting Emerging Applications with Low-Latency Failover in P4.
SIGCOMM Workshop on Networking for Emerging Applications and Technologies (NEAT), 2018.

E. Elenberg, K. Shanmugam, M. Borokhovich, A. Dimakis.
Beyond Triangles: A Distributed Framework for Estimating 3-profiles of Large Graphs.
ACM SIGKDD Conference on Knowledge, Discovery and Data Mining (KDD), 2015.

I. Mitliagkas, M. Borokhovich, A. Dimakis, C. Caramanis.
FrogWild! - Fast PageRank Approximations on Graph Engines.
Very Large Data Bases (VLDB), 2015.

M. Borokhovich, L. Schiff, S. Schmid.
Provable Data Plane Connectivity with Local Fast Failover: OpenFlow Graph Algorithms.
ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN), 2014.

C. Avin, M. Borokhovich, Z. Lotker, and D. Peleg.
Distributed Computing on Core-Periphery Networks: Axiom-based Design.
International Colloquium on Automata, Languages, and Programming (ICALP), 2014.

M. Borokhovich, S. Schmid.
How (Not) to Shoot in Your Foot with Local Fast Failover.
International Conference on Principles of Distributed Systems (OPODIS), 2013.

C. Avin, M. Borokhovich, B. Haeupler, and Z. Lotker.
Self-Adjusting Grid Networks to Minimize Expected Path Length.
Colloquium on Structural Information and Communication Complexity (SIROCCO), 2013.

C. Avin, M. Borokhovich, Y. Hadad, E. Kantor, Z. Lotker, M. Parter, and D. Peleg.
Generalized Perron-Frobenius Theorem for Multiple Choice Matrices, and Applications.
ACM-SIAM Symposium on Discrete Algorithms (SODA), 2013.

Borokhovich Michael, Avin Chen, Zvi Lotker.
Tight Bounds for Algebraic Gossip on Graphs.
IEEE International Symposium on Information Theory (ISIT), 2010.

Avin Chen, Borokhovich Michael, Arik Goldfeld.
Mastering (Virtual) Networks. A Case Study of Virtualizing Internet Lab.
International Conference on Computer Supported Education (CSEDU), 2009.