Basel Shbita

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EDUCATION

University of Southern California; Los Angeles, CA, USA   **Aug 2018 - Present**

PhD Student, Computer Science
<u>Research Interests</u>: Knowledge Graphs, Semantic Web, Linked Open Data, Machine Learning, Information Extraction, Information Technology, Computer Networks

Tel Aviv University; Tel Aviv, Israel   **Feb 2011 - Jan 2015**

BSc, Electrical and Electronic Engineering, *magna cum laude* (Cumulative GPA: 93.33/100)
Major Coursework Areas: Computer-Science, Communications and Electronic Devices
Honor's Thesis: "*IPoIB Router in the Switch-X Product Family: from Firmware Design to Implementation of the Verification Environment and the Debug Tools*" (Supervisor: Mr. Ami Marelli)

ACADEMIC EXPERIENCE

Information Sciences Institute; Marina del Rey, CA, USA   **Aug 2018 - Present**
Research Assistant, *Center on Knowledge Graphs*

- Working on knowledge graphs and the semantic web with an emphasis on data normalization as a means to solve complex information integration problems
- Investigating new methodologies to leverage machine learning techniques to establish automatic information extraction and knowledge graph construction

PROFESSIONAL EXPERIENCE

Apple; Herzliya, Israel   **Jan 2018 - Jun 2018**
Embedded Firmware Engineer, *Flash Storage Software Department*

- Designed and developed complex software modules for ultra high performance, real-time embedded systems in a multiprocessor environment for Apple products
- Defined firmware features and led HW-FW integrations
- Completed vertical integration with other modules in storage stack (i.e. drivers, file-system)

Mellanox Technologies; Tel Aviv, Israel   **2011 - 2017**
Senior Firmware Engineer & Team Leader, *Switch Silicon Core Department* **Apr 2017 - Jun 2017**

- Managed team of 5 engineers
- Led the 100GbE Switch Systems firmware development process and software infrastructure activities - an operation involving 16 engineers
- Developed a distributed functional testing environment; debug tools and performance testing in C++ in Unix for both Ethernet and InfiniBand fabrics in OSI Data-Link and Network layers
- Implemented complex verification architectures consisting of static and dynamic analysis
- Delivered technical presentations to 50+ engineers and developers from various teams including: software, hardware, production, and qualification
- Awarded for excellence and ranked "Superior" (top 5% out of 3000)

Team Leader Firmware Engineer, *Switch Silicon Core Department*   **May 2015 - Mar 2017**

- Managed team of 3 engineers
- Contributed to end-to-end development and defined version-release procedures for the company's 100GbE Switch products
- Conducted personal training, code reviews; defined coding-style and methodologies of software engineering for team of 30
- Optimized shared library cross-platform code, resulting in 40% reduction in project compilation time for 90+ department developers
- Led full silicon bring-up process, both Pre-Silicon and Post-Silicon stages
- Negotiated integration process with leaders of partner companies such as Cumulus and Microsoft
- Supervised remote testing processes operating in Beijing (China), Seattle and Sunnyvale (US)
- Interviewed and effectively participated in the hiring and termination of employees

Firmware Engineer, *Switch Silicon Core Department*   **Mar 2014 - Apr 2015**

- Achieved 2nd place in Hackathon with "Scaling FW Switch Reference Model to Higher Layers"; The simulation tool saved up to 50% time in FW development cycle & customer support

- Created training-program for new employees, including dedicated code library and practical tasks
- Led the planning and priorities coordination procedure with software architecture and SDK teams
- Developed "Stress" tool that has become major tool for system production/screening, power measurements and debug process
- Conducted daily technical and verification-architectural guidance and coding assistance

Firmware Student, *Switch Silicon Core Department*   **Oct 2011 - Feb 2014**

- Developed ANSI-C compiler-specific code to run on Switch Systems RISC
- Managed continuous support and optimization in Switch System Python-based regression scripts
- Implemented cross-platform error-injection and functional-validity tool used by both departments of Switch Systems and Channel Adapters
- Collaborated with chip-design and software engineers to create a Post-Silicon Random Verification Environment for the 56GbE and EDR (100Gbps Infiniband) technologies

TEACHING EXPERIENCE

University of Southern California; Los Angeles, CA, USA   **Spring & Fall 2020**
Teaching Assistant, *DSCI 558: Building Knowledge Graphs*

- Designed and evaluated course examinations, written assignments, and weekly quizzes
- Held weekly office hours
- Presented several sessions of 1-2 hour lectures & introduced my work & research to the class

INTERNSHIPS

General Electric Global Research; Niskayuna, NY, USA (online)   **2021**
Research Fellow Intern

- Worked at the Artificial Intelligence Technical Domain
- Applied Semantic Web Technologies and Machine Learning algorithms to extract knowledge from structured and unstructured data sources for Knowledge Graph population

Research Science Institute; Cambridge, MA, USA   **2009**
Research Intern (Computer-Science)

- Studied Statistical Natural Language Processing, Automatic Speech Recognition and Machine Learning; performed model training and testing with Python
- Wrote paper titled "*Improving Text-Independent Speaker Identification Performance Using Gaussian Mixture Speaker Models*" under direction of Dr. David Palmer (HP Autonomy (Virage), Inc).
- Conducted on-campus coursework in scientific theory and off-campus work in scientific research over 6 weeks under sponsorship of the Center for Excellence in Education and MIT

AWARDS AND SCHOLARSHIPS

Alexa Prize Socialbot Grand Challenge 4; Seattle, WA, USA   **2021**
Our team was the recipient of a research grant valued $250k as part of the competition

Modeling and Managing Complicated Systems Institute; Pittsburgh, PA, USA   **2019**
Recipient of the Ford Foundation MWS19 Graduate Student Travel Grant (value $1.6k)

Tel Aviv University; Tel Aviv, Israel   **2013**
Faculty Dean's List of Outstanding Undergraduate Students

Tel Aviv University; Tel Aviv, Israel   **2013**
Recipient of the Freescale Semiconductor Israel Excellence Scholarship (value $1.2k)

CONFERENCES AND OFFICIAL EVENTS

The 17th Extended Semantic Web Conference (ESWC); Online   **2020**
Conference on semantic technologies

- Published paper and delivered an oral presentation

The 10th International Conference on Knowledge Capture; Marina del Rey, CA, USA **2019**
Conference on knowledge representation, acquisition and extraction (a.k.a. K-CAP)

The 15th IEEE eScience Conference; San Diego, CA, USA   **2019**
Workshop on Advanced Knowledge Technologies for Science in a FAIR World (AKTS)

- Published paper and delivered an oral presentation at the workshop

The 2019 Modeling the World's Systems Conference; Washington, D.C., USA   **2019**
Conference on the technology and policy of modeling and managing interacting complex systems

- Published paper and delivered an oral presentation and poster

The 2016 VSF Interoperability Event; The Woodlands, TX, USA   **2016**
Video Service Forum annual video broadcast networking interoperability event
- Performed testing of HBRMT (High Bit Rate Media Transport over IP)

Haifa Verification Conference (HVC); Haifa, Israel   **2015**
Haifa Verification Conference hosted in IBM Research & Development Labs

The 26th IBTA InfiniBand and RoCE Plugfest; Durham, NH, USA   **2014**
Infiniband Trade Association event to measure compliance of vendors with the IBTA specifications
- Performed interoperability testing of Infiniband and RDMA over Converged Ethernet
- Collaborated with various vendors to improve testing plan design

EXTRACURRICULAR ACTIVITIES

PhD Student Supervisor, IUSSTF at USC; Los Angeles, CA, USA   **2019**
- Supervised and mentored an intern student (IIT Delhi) in the Indo-U.S. Science and Technology Forum (IUSSTF) at USC-ISI working on leveraging semantics to geospatial data using reverse-geocoding services (i.e. OpenStreetMap), instance matching and ranking algorithms

Kosmic Kamels/Middle East Dreamers at Burning Man; Black Rock City, NV, USA **2019**
- Co-formed a movement seeking to create new possibilities for makers, activists, entrepreneurs, artists, engineers, business consultants, NGO directors, healers from the MENA region

Midburn: Israeli Burning Man Regional Organization; Negev, Israel   **2016 - 2018**
- Supervised art installation procedures
- Contributed code to development of "Dreams", an open-source platform to help community plan co-created events

Tira Academics: Students Volunteering Association; Tira, Israel   **2013 - 2017**
- Co-initiated association to expand academic opportunities for freshmen and high-school students
- Tutored freshmen engineering students, provided 1-on-1 guidance with Algebra, Calculus, C/Python programming and conducted workshops on a quarterly basis

PUBLICATIONS

B. Shbita, C. A. Knoblock, W. Duan, Y. Chiang, J. H. Uhl, and S. Leyk. Building Linked Spatio-Temporal Data from Vectorized Historical Maps. In *European Semantic Web Conference*, pages 409–426. Springer, 2020.

B. Shbita, B. Vu, D. Feldman, M. Pham, A. Rajendran, C. Knoblock, J. Pujara, and Y. Chiang. Creating a FAIR Data Catalog to Support Scientific Modeling. In *Workshop on Advanced Knowledge Technologies for Science in a FAIR World (AKTS)*, 2019.

B. Shbita, A. Rajendran, J. Pujara, and C. Knoblock. Parsing, Representing and Transforming Units of Measure. In *Modeling the World's Systems*, 2019.

LANGUAGES

English ● Arabic ● Hebrew ● Russian

TECHNICAL SKILLS

- Python, C, C++, C#, MATLAB, VHDL, Cadence PSpice and Assura (Virtuoso)
- RDF, Turtle and SPARQL
- SQL, PostgreSQL and PostGIS
- Unix shell, Bash and Perl scripting
- Ruby on Rails, HTML, CSS, Node.js and Flask
- Win32 applications, Dot-Net C# Web, Console applications and Batch scripting
- PC platforms – MS Visual Studio, Eclipse, Adobe Photoshop, Adobe Premiere and Ableton Live

HOBBIES AND INTERESTS

Graphic Design ● Figure Drawing ● Music Production ● Soccer ● Combined Martial Arts