Curriculum Vitae – Jose Yallouz

PERSONAL DETAILS

Name: Jose Yallouz
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Languages: Hebrew, English, Portuguese, Spanish

EDUCATION

2010 to 2016: Ph.D. (direct track) in Computer Networking
Affiliation: Technion Faculty of Electrical Engineering
Supervisor: Prof. Ariel Orda
Dissertation: "Schemes for Network Survivability in a QoS-Supporting Architecture"
2004 to 2008: B.Sc in Computer and Software Engineering
Affiliation: Technion Faculty of Electrical Engineering

RESEARCH INTERESTS

- Data Centers and HPC Cluster Topologies, Routing Algorithms and Congestion Control.
- In-Network Computing.
- Survivability, Reliability and Fault-Tolerance in computer and power networks.
- Software-Defined Networks (SDN), Network Function Virtualization (NFV) and Fog Computing.
- Optimization, Queueing Theory, Game Theory, Algorithms and their application to computer networks.
- Other Computer Science areas, e.g. Computer Architecture, Compilers and Theory of Computation.

RESEARCH AND PROFESSIONAL EXPERIENCE

Toga Networks [Huawei Company] (2021 to date) – Sr. System Architect

- Leading In Network Computing Research for Huawei NIC products.
- Research on Data Center and HPC Topologies.

NVIDIA [former Mellanox] (2019 to 2021) **–** Network Researcher

- Research on network topology design.
- Research on Congestion Control for HPC Clusters.
- Research on Infiniband protocol Secutrity.

Intel (2016 to 2019) – Computer Architect

- Development of mathematical functionality inside Intel Core.
- Research on accelerators inside Intel Core, e.g. cryptographic and Deep Learning.
- Specification and documentation of new features requirements.

Technion (2010-2016)**: Research as part of the Ph.D. Dissertation**

- Developing and exploiting the concept of tunable survivability.
- Designing new routing algorithms.
- Being exposed to news Technologies in networking field, such as Software-Defined Networks (SDN), Network Function Virtualization (NFV).
- An integrate part of the computer Networking Technion Laboratory

Bell Labs (2015) **–** Student Intern analyzing NFV performance issues.

Marvell (2013) **–** Student Intern analyzing and developing a stackable router.

Microsoft (2012) **–** Student Intern participating in the following project:

- TERAFLUX: Exploiting Dataflow Parallelism in Tera-device Computing.

Cisco Systems, Inc. (2007 - 2010) – Embedded Software Engineer

- Development of a firewall blade for the Cisco Routers GSR
- Knowledge of Cisco operation systems (IOS and IOS-XR)

Tevet (2005-2007) – startup in the area of fabrication process control of semi-conductors
Software Programmer

- Development in Visual Studio Environment – languages C/C++/C#

Shaam Information Systems (1998-2000, during high school) - Web Site Programmer

- Development of web sites and intranet community site in Html and ASP

TEACHING EXPERIENCE

- **TEACHING ASSISTANT (**2010 – 2016)
  Taught the following advanced courses in the Technion EE Faculty:
  - computer networks and internet 2 (EE-046005),
  - compilers (EE-046266),
  - computer architecture (EE-046267).

- **PROJECT SUPERVISOR (**2010 - now) – have supervised about 22 projects over this period.
  - Technion, Computer Networks Lab and Software Lab
    Supervising projects that include development, simulation, and implementation of networking algorithms, protocols and applications. The projects are implemented in C++, Phyton or Java in LINUX or Windows systems. The simulations are mostly based on OMNET++.
  - Technion, VLSI Lab
    Supervising projects that include development, simulation, and implementation of different computer architectures. The projects are implemented in Verilog or VHDL languages. The simulations are mostly based on synopsys tools.

  (See supervising activities in the sequel for further details)

- **TEACHING LABORATORY INSTRUCTOR** (2010 – 2016)
  Instructed several laboratories courses in the Technion EE Faculty:
  TCP/IP Lab, Routing and Switching Lab, System Verilog Lab, Architecture and Synthesis Lab.

HONORS AND AWARDS

- 2021 NVIDIA Israel Networking Hackathon 3rd place Award:" Early Propagation Of Group-Based Fault Routing Notifications"
- 2020 NVIDIA NTECH Conference Best Poster Award: "Expanding Data Center and HPC Topologies with Expanders"
- 2013 Israel Ministry of Science Fellowship in Cyber and advance Computing
- 2013 Mel Berlin (Cyber) Fellowship from EE Technion faculty
- 2011 Supervised project winning Yehoraz Kasher project award – "A Novel Scheduler for a Quad Core Risc Processor"
- 2008 Oz Mozes best project award - "The Design and Verification of a Simultaneous Multithreading microprocessor"

RESEARCH GRANTS

- 2020 IIA Generic R&D Grant: "Expanding Data Center and HPC Topologies with Expanders"(~3M ILS)
  - This grant was provided by the Israel Innovation Authority to projects in the industry with the potential to influence the Israeli market in the long term (next 5 years).
  - I was the project manager who suggest the proposal, write the proposal, and manage a team of 6 people working on this project.

JOURNAL PUBLICATIONS

- Yossi Kanizo, Ori Rottenstreich, Itai Segall, **Jose Yallouz** "Designing Optimal Middlebox Recovery Schemes with Performance Guarantees", IEEE Journal on Selected Areas in Communications 2018, Series on Network Softwarization and Enablers. [Impact Factor 8.085 Q1]
- **Jose Yallouz**, Ori Rottenstreich, Péter Babarczi, Avi Mendelson, Ariel Orda, "Optimal link-disjoint node-'somewhat disjoint' paths" *IEEE/ACM Transactions on Networking* 2018 26(3): 1110-1122 (2018) [Impact Factor 3.376 Q1]
- **Jose Yallouz**, Ariel Orda, "Tunable QoS-Aware Network Survivability" *IEEE/ACM Transactions on Networking* 25(1): 139-149 (2017) [Impact Factor 3.376 Q1]
- Yossi Kanizo, Ori Rottenstreich, Itai Segall, **Jose Yallouz**, "Optimizing Virtual Backup Allocation for Middleboxes" *IEEE/ACM Transactions on Networking* 25(5): 2759-2772 (2017) [Impact Factor 3.376 Q1]
- **Jose Yallouz**, Ori Rottenstreich and Ariel Orda, "Tunable Survivable Spanning Trees", *IEEE/ACM Transactions on Networking* 24(3): 1853-1866 (2016) [Impact Factor 3.376 Q1]

CONFERENCE PUBLICATIONS

- Ori Rottenstreich, **Jose Yallouz**, Lion Levi "Isolated Trees in Multi-Tenant Fat Tree Datacenters for In-Network Computing." IEEE Hot Interconnects 2020
- Yossi Kanizo, Ori Rottenstreich, Itai Segall, **Jose Yallouz** "Designing Optimal Middlebox Recovery Schemes with Performance Guarantees" , IEEE Conference on Computer Communications (INFOCOM*)* 2018 [Acceptance Rate 18%, Rank A*]
- **Jose Yallouz**, Amit Gradstein, Simon Rubanovich, Zeev Sperber, Adi Yoaz,"An In-Depth Learning of Matrix Multipliers for Deep Learning Accelerators" Compiler, Architecture and Tools Conference (CATC) 2017
- **Jose Yallouz**, Janos Tapolcai , Attila Korosi , Kristof Berczi, Laszlo Gyimothi, Ariel Orda "Packing Strictly-Shortest Paths in a Tree for QoS-Aware Routing" IFIP/IEEE Networking 2017
- Marcelo Caggiani Luizelli, Danny Raz, Yaniv Sa'ar, **Jose Yallouz**, "The actual cost of software switching for NFV chaining." *IFIP/IEEE Integrated Network and Service Management* (IM) 2017
- Yossi Kanizo, Ori Rottenstreich, Itai Segall, **Jose Yallouz**, "Optimizing virtual backup allocation for middleboxes" *IEEE International Conference on Network Protocols* (ICNP) 2016[Acceptance Rate 18%, Rank A]
- **Jose Yallouz**, Ori Rottenstreich, Péter Babarczi, Avi Mendelson, Ariel Orda, "Optimal link-disjoint node-'somewhat disjoint' paths" *IEEE International Conference on Network Protocols* (ICNP) 2016 [Acceptance Rate 18%, Rank A]
- **Jose Yallouz**, Gideon Blocq, Yoram Revah, Aviran Kadosh, Ariel Orda, "'"Don't Let the Stack Get Stuck": A Novel Approach for Designing Efficient Stackable Routers", *IEEE High Performance Switching and Routing* (HPSR) 2015. 2016
- **Jose Yallouz**, Ori Rottenstreich and Ariel Orda, "Tunable Survivable Spanning Trees", ACM SIGMETRICS / International Conference on Measurement and Modeling of Computer Systems 2014. [Acceptance Rate 12%, Rank A*]
- **Jose Yallouz** and Ariel Orda, "Tunable QoS-Aware Network Survivability", *IEEE Conference on Computer Communications* (*INFOCOM)* 2013. [Acceptance Rate 17.4%, Rank A*]

The rank was taken from http://portal.core.edu.au/conf-ranks/

ONGOING PUBLICATIONS

- Tal Mizrahi and **Jose Yallouz**, "Mapping the Ukrainian Refugee Crisis Using Internet Measurements" submitted to *ACM SIGCOMM Computer Communication Review*
- Ori Rottenstreich, **Jose Yallouz**, Lion Levi "Isolated Trees in Multi-Tenant Datacenter Topologies" submitted to *IEEE/ACM Transactions on Networking*.

BOOK CHAPTER

- Teresa Gomes, Luísa Jorge, Rita Girão-Silva, **Jose Yallouz**, Péter Babarczi, Jacek Rak:"Fundamental Schemes to Determine Disjoint Paths for Multiple Failure Scenarios." Guide to Disaster-Resilient Communication Networks 2020
- Alberto Avritzer, Daniel Sadoc Menasche, Lucia Happe, Sindhu Suresh, Anne Koziolek, **Jose Yallouz**, "Scalable Assessment and Optimization of Power Distribution Automation Networks", Springer Series in Reliability, August 2016.

OTHER PUBLICATIONS

- Tal Mizrahi and **Jose Yallouz**, "Wrongful Termination of Internet Protocol (IP) Packets." RFC 8367 (2018)

PATENTS

- Accelerator systems and methods for matrix operations US10942738B2
- Advanced error detection for integer single instruction, multiple data (SIMD) arithmetic operations US10725788B1
- Apparatuses, methods, and systems for hashing instructions US10824428B2
- Apparatuses, methods, and systems for instructions of a matrix operations accelerator US20200201932A1
- Apparatuses, methods, and systems for transpose instructions of a matrix operations accelerator US10990397B2
- Efficient rotate adder for implementing cryptographic basic operations US20200210625A1
- Deadlock-free rerouting for resolving local link failures using detour paths DE102021209842A1
- Seep – a routing algorithm for the fixed matchings switch DE102021213414A1
- Turn-based deadlock-free routing in a Cartesian topology US11425027B2
- Efficient propagation of fault routing notifications(pending)
- Large-scale network with high port utilization (pending)
- Packet scheduling after queueing (pending)

INVITED TALKS

1. "DataCenter (DC) and HPC topologies Overview" , Toga University Mar. 2022.
2. "DataCenter (DC) and HPC topologies Overview" , NVIDIA Switch Software Academy May 2021.
3. "On In-Network Computing and Beyond", VMWare Research Oct. 2019.
4. "Designing Optimal Middlebox Recovery Schemes with Performance Guarantees", Tech Forum, Intel, Israel, Apr. 2018.
5. "Schemes for Network Survivability in QoS-Supporting Architectures", Yahoo! Labs, Israel, Apr. 2018.
6. "From Theory to Practice: The Actual Outcome of Two 'Somewhat Disjoint' Network Evaluation Studies" IBM Cyber Labs, Beer Sheva, Israel, Feb. 2017
7. "From Theory to Practice: The Actual Outcome of Two 'Somewhat Disjoint' Network Evaluation Studies" CeClub Seminar, Faculty of Electrical Engineering, Technion, Israel, Dec. 2016
8. "Schemes for Network Survivability in QoS-Supporting Architectures", HP Labs, Israel, Apr. 2016.
9. "Schemes for Network Survivability in QoS-Supporting Architectures", Tech Forum, Intel, Israel, Aug. 2016.
10. "Schemes for Network Survivability in QoS-Supporting Architectures" CeClub Seminar, Faculty of Electrical Engineering, Technion, Israel, Dec. 2015
11. "The Power of Tuning: A Novel Approach for Network Survivability" Bell Labs, Israel, Dec. 2015.
12. "The Power of Tuning: A Novel Approach for Network Survivability", *Tmit Future Internet Seminar*, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, Hungary, Dec. 2014.
13. "Don't let the stack get stuck: A novel approach for designing efficient stackable routers", Marvell, Israel, Sep. 2014.
14. "Tunable Survivable Spanning Trees", *Columbia University*, NY, USA, Jun. 2014.
15. "Tunable Survivable Spanning Trees", Israel Networking Day, Tel Aviv Yaffo Academic College, Apr. 2014.
16. "Optimal Link-Disjoint Node-"Somewhat Disjoint" Paths", Tech Forum, Intel, Israel, Nov. 2016.

PROFESSIONAL ACTIVITIES

- Member of IEEE
- Organizer and co-founder of several technology seminars hosting leading researchers from academia and industry, namely:
    - *Intel Tech-Forum* seminar.
    - Technion's *ceClub* seminar.
    - *Netmeeting*, a framework for networking related graduate students to discuss their research topics.
- Referee for **Journals** and **Conferences:**
    - *IEEE Transactions on Networking* (*ToN*)
    - *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS)*
    - *ELSEVIER* Optical Switching and Networking
    - *SPRINGER Photonic Network Communications*
    - *IEEE International Conference on Computer Communications* (*Infocom*)

RESEARCH EXPEDITIONS

December 2014 - Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics, cooperating with Prof. Janos Tapolcai.
October 2011 – ETICS Project Phd course, Paris France.

RESEARCH PROJECTS

During my PHD studies, I have participated in several EU research projects, among them:

- Resilient communication services protecting end-user applications from disaster-based failures (RECODIS) part of COST Action CA15127
- Economics and Technologies for Inter-Carrier Services (ETICS)
- TERAFLUX: Exploiting Dataflow Parallelism in Tera-Device Computing

SUPERVISING AND MENTORING ACTIVITIES

Technion, VLSI Lab Supervised projects (2010-now):

- "The Design and Implementation of a Chip MultiProcessor", Idan Regev and Noi Nakash, ***Yehoraz Kasher project award (2011).***
- "SMT RISC Microprocessor" , Tamir Buchris and Vitali Kleinik
- "A Multi-Path Routing In-Order Delivery NoC", Shahaf Shuler and Eshed Ram
  Distinguished VLSI Lab Project Award (2013).
- "Morphing ManyCore-ManyThread Machines", Zvi Ben Josef and Shai Vargaftik
- "The Design and Implementation of Vector Processor", Dror Kabli and Reut Kasis
- "The Design and Implementation of a IP Router" Michael Pogrebinsky and Hagai Admon
- "POSIT Arithmetic Hardware Implementation" Shay Agroskin and Shahaf Haller

Technion, Computer Networks Lab and Software Lab Supervised projects (2010-now):

- "Buffered Load Balancing in Large Heterogeneous Systems", Neria Uzan
- "Kubernetes Load Balancing", Alon Tavor
- "High Availability Networks with OpenFlow", Omri Lifdhitz and Shay Oliver
- "Trace Route on Google Maps", Boris Mittelberg
- "DDos on Cloud", Itamar Cohen and Avihai Rubin
- "Monitoring Snort on Google Maps" Amitai Kuper
- "Survivable Spanning Trees Algorithm",Eytan Katz and Dmitry Simaniv
- "Generate Internet Topologies with Brite" Abu-Fanni Nisrin, Shuruk Malachem
- "Improving Wet Drills in compilation course" Alon Dromi and Ofir Sandak
- "Spanning Tress Stretching Simulations", Adi Lavi and Gil Sharon
- "Distributed DDoS Protection", Artyom Pertonik and Yuri Rozhansky
- "Comparison among graph algorithmic libraries", Oded Naor and Alon Peleg
- "Advanced Topics in compilation", Naphtali Levy
- "HTTP application protocol implementation", Natalia Poliusuk and Daniel Brukhis
- "Improving Open Stack (Nova) Scheduler", Muhamad Grefat

MILITARY SERVICE

- Vice-Commandant of a Dvora-Patrol ship in the Israel Navy (2000-2003).