Shiva Ketabi

Research Interests	◊ Network Systems, Congestion Control, Machine Learning for Networking, Networking for Machine Learning, Data Centre Networking		
Education	 Ph.D. in Computer Science Department of Computer Science University of Toronto, Toronto, Canada <i>Thesis</i>: Flow Consolidation for Congestion Control in Data Supervisor: Yashar Ganjali 	May 2016 – Nov. 2022 GPA: 4/4 a Centers	
	 ◇ M.Sc. Degree in Computer Science Department of Computer Science University of Toronto, Toronto, Canada Thesis: Dependence of TCP Performance on Congestion C Supervisor: Yashar Ganjali 	Sep. 2014 – Apr. 2016 GPA: 3.93/4 Control Parameters	
	 ◇ B.Sc. Degree in Computer/Software Engineering Department of Computer Engineering Sharif University of Technology, Tehran, Iran <i>Thesis</i>: A Storage Structure for Databases using Apache H Supervisor: Hamid Beigy 	Sep. 2010 – Sep. 2014 GPA: 17.73/20 Iadoop	
WORK	◊ Software Engineer at Google. Supremula US	Fall 2023 - Now	
DAPERIENCE	Improving the performance of networking through design, implementation, and test of new topology and routing solutions for machine learning workloads.		
	 Senior Software Engineer at Huawei. Toronto, Canada Improving the performance of data center networking three and test of new congestion control and load balancing solu 	Winter 2022 - Summer 2023 bugh design, implementation, tions.	
	 Research Intern at Huawei. Toronto, Canada Researching on data center networking, designing congestion reinforcement learning for computer networks management 	Summer 2020 - Fall 2021 n control protocols, and using t.	
	 Student Researcher at Google. Toronto, Canada Improving scalability of Andromeda, Google Cloud's network 	Fall 2018 - Summer 2019 ork virtualization stack.	
	 Software Engineer Intern at Google. Sunnyvale, US Sunnyvale, US 	Summer 2017	
	 ◇ Intern at ASR Gooyesh Pardaz Co. Summer 2014 		
	Tehran, Iran Developing an Android messaging application with Persian speech recognition–the first Android application for speech to text in Persian.		
Publications	◇ On Augmenting TCP/IP Stack via eBPF. Sepehr Abbasi, Ali Munir, Mahmoud Bahnasy, Shiva K Proceedings of the 1st Workshop on eBPF and Kernel Ext Proposing a framework that augments and increases the net stack to address recent challenges of flow management in d	Xetabi , and Yashar Ganjali. ensions 2023. work visibility of the TCP/IP lata centers.	

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\diamond	A Deep Reinforcement Learning Framework for Optimizing Congestion Co	n-
	trol in Data Centers.	

Shiva Ketabi, Hongkai Chen, Haiwei Dong, and Yashar Ganjali. IEEE/IFIP Network Operations and Management Symposium (NOMS) 2023.

Building a framework for automatic and dynamic tuning of congestion control parameters in data centers.

◊ METHODS, SYSTEMS AND DEVICES FOR NETWORK MANAGEMENT USING CONTROL PACKETS.

Mahmoud Bahnasy, **Shiva Ketabi**, Sepehr Abbasi, Yashar Ganjali, and Fenglin Li. U.S. Patent Application 17/488,893, filed March 30, 2023.

◊ DWTCP: Ultra Low Latency Congestion Control Protocol for Data Centers. Sepehr Abbasi*, Shiva Ketabi*, Ali Munir, Mahmoud Bahnasy, and Yashar Ganjali. Under review, Available on arXiv:2207.05624.

Introducing a new congestion control signal (*Scout*) which provides fast signaling with low overhead, ultra low latency, and near zero queue size.

 \diamond Hierarchical Congestion Control (HCC): Fairness and Fast Convergence for Data Centers.

Shiva Ketabi, and Yashar Ganjali. IFIP Networking Conference 2022.

Designing a system for Hierarchical Congestion Control (HCC) that enables cooperation among flows, and improves fairness and convergence with low communication and processing overheads.

◊ Correlation-Aware Flow Consolidation for Load Balancing and Beyond.

Shiva Ketabi, Matthew Buckley, Parsa Pazhooheshy, Faraz Farahvash, and Yashar Ganjali. ACM SIGMETRICS Performance Evaluation Review 2022.

Proposing correlation-aware flow consolidation, which results in smoother flows, estimating with a higher confidence, and reducing over/undershooting of link capacities.

◊ Perfect is the Enemy of Good: Lloyd-Max Quantization for Rate Allocation in Congestion Control Plane.

Shiva Ketabi, and Yashar Ganjali. IEEE/IFIP Network Operations and Management Symposium (NOMS) 2020.

Suggesting orders of magnitude higher speeds for explicit rate allocation in data centres using Lloyd-max quantization of flow rates and showing the introduced error is negligible using real network traces.

Teaching Experience

◊ Teaching Assistantship, University of Toronto

 Software-Defined Networking, Computer Networks, Algorithm Design, Analysis and Complexity, Introduction to Computer Science, Introduction to the Theory of Computation

◊ Teaching Assistantship, Sharif University of Technology

 \cdot Theory of Machine Languages and Automata, Fundamentals of Programming in C++

Honors and Awards

- ♦ Golden Network Award, Huawei's Data Center Lab. 2023.
 - ♦ Ontario Graduate Scholarship. 2020-2021.
 - ♦ Bell Graduate Scholarship. 2020-2021.
 - ♦ **Best poster award** in ICNP conference. 2019.
 - ◊ Google's grant for Grace Hopper Celebration of Women in Computing. 2017.
 - ◊ Outstanding student award: offer of admission for graduate studies exempted from entrance exam, Sharif University of Technology, Iran. 2014.

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	◊ Ranked in the top 0.1% in Iran's Nationwide University Entrance Exam for Engineering and Applied Sciences. 2010.
TECHNICAL	\diamond Programming : Java, C/C++, Go.
Skills	Scripting & special-purpose: Python, Matlab, TensorFlow, PyTorch, MySQL, Bash, Prolog, Tcl.
	♦ Operating systems : Linux, Windows, MAC OS.
	\diamond Network simulation : ns-2, ns-3, Mininet.
Selected Courses	 Output of Toronto Software-Defined Networking, Decision Making under Uncertainty, Introduction to Machine Learning, Knowledge Representation and Reasoning, Algorithms for Genome Sequence Analysis, Academic Leadership in Computer Science, Topics in Ubiquitous Computing (Critical Computing), and Blockchain Technology.
	◊ Sharif University of Technology

· Voluntarily taken Data & Network Security, System Dynamics, Computer Vision.