Salma Emara

Present Appointment	Assistant Professor, Teaching St The Edward S. Rogers Sr. Depar and Computer Engineering, Uni 10 King's College Road Toronto, Ontario, Canada, M5S	cream rtment of Electrical iversity of Toronto 3G4	
Personal and Contact Information	Citizenship: Egyptian Date of Birth: September 1996 Email: salma@ece.utoronto.ca Website: https://www.eecg.utoront	:o.ca/~salma/	
EDUCATION	University of Toronto , Toronto, Ontario, Canada The Edward S. Rogers Sr. Department of Electrical and Computer Engineering \diamondsuit Ph.D. , Computer Engineering, SEPTEMBER 2018 – NOVEMBER 2022		
	→ Dissertation: "Sequential Decision-Making in Networking Algorithms Using Deep Reinforcement Learning"		
	$\hookrightarrow Advisor$: Baochun Li		
	\hookrightarrow Thesis Committee: Alberto Leon-Garcia, Jonathan Rose, Yashar Ganjali and Mohamed Hefeeda		
	American University in Cairo Department of Electronics and Co \$\langle\$ B.Sc., Electronics and Com-	, Cairo, Egypt <i>mmunications Engineering</i> munications Engineering, JUNE 2018	
	$\hookrightarrow \mathit{Thesis} \mathit{Advisors}$: Hassa	nein Amer and Ramez Daoud	
Professional Experience	University of Toronto , Toronto, Ontario, Canada The Edward S. Rogers Sr. Department of Electrical and Computer Engineering		
	Assistant Professor, Teaching Str	eam January 2023 – Present	
	Winter 2023 – 2025	APS 105: Computer Fundamentals Click to view the Winter 2023 lectures playlist	
	Winter 2024, Fall 2024	ECE 1513: Introduction to Machine Learning Click to view the lectures playlist	
	Fall 2023 – 2024	ECE 244: Programming Fundamentals Click to view a sample lecture	
	Ph.D. Candidate	September 2018 – November 2022 January 2022 – April 2022	
	Winter 2022	APS 105: Computer Fundamentals Click to view an online or an in-person sample lecture	

	\diamond Graduate Teaching	Assistant	January 2019 – Decen	nber 2021
	Winter 2019 -	- 2021	APS 105: Computer Fundamental Click for the recorded tutorials of Winter 2	ls 2021
	Fall 2019 – 20)21	ECE 244: Programming Fundame Click for recorded tutorials of Fall 2020	entals
	$\diamond~$ Research Assistant		September 2018 – Noven	nber 2022
	supervised by l	Professor	Baochun Li	
	American University is Department of Electronics ♦ Undergraduate Tea	n Cairo , s and Con ching Ass	Cairo, Egypt nmunications Engineering istant September 2015 –	May 2018
	Fall 2015 Spring 2016	ECE 21): Digital Logic Design	
	Spring 2017 Fall 2017 Spring 2018	ECE 43	5: Microcontroller System Design	
	\diamond Undergraduate Res	earch Ass	sistant June 2014 – Au	gust 2016
	supervised by l	Professor	Nageh Allam	
Honors and Awards	♦ Early Career Teach ing, University of Teach	ing Awar pronto.	d, Faculty of Applied Sciences and	Engineer- April 2025
	♦ Departmental Teaching Award, University of Toronto.* May 2024			
	♦ Departmental Teaching Award, University of Toronto. * May 2023			
	$\diamond~{ m ECE}$ Fellowship, University of Toronto.			
			September 2018 – Decen	nber 2022
	\diamond Departmental Teacl	hing Awa	rd, University of Toronto.*	May 2022
	$\diamond~$ Departmental Teaching Assistant Award, University of Toronto.*			
	$\displaystyle \diamondsuit \; {\displaystyle \operatorname{Shortlisted}} \; {\displaystyle \operatorname{for}} \; \operatorname{TATI}_{\dagger}$	P TA Teac	hing Excellence Award, University	May 2022 of Toronto.
			M	arch 2022
	\diamond Vector Scholarship	in Artifici	al Intelligence (VSAI).	
			September 2018 – Au	gust 2019
	\diamond President Cup, Ame	erican Un	iversity in Cairo. [‡]	
			e	June 2018
	\diamondsuit Mohamed El Beleid	y Academ	ic Award, American University in (Cairo. [‡] June 2018
	* The award is determined b	y student vo	tes conducted by the ECE Student Club at t	he end of the
	academic year. [†] The award is determined by	z student an	d faculty nominations and an award commi	ttee

 $^\dagger The award is determined by student and faculty nominations and an award committee. <math display="inline">^\ddagger The award is granted to the highest GPA students in the graduating class.$

	 Academic Achievement Scholarship, American University in Cairo. The award offers a 30% tuition fee discount to students with a GPA higher than 3.7. 2015 - 2018
	 A Highest GPA, School of Sciences and Engineering, American University in Cairo. 2015 – 2018
	\diamond Top in the world in Physics, IGCSE Examinations. \qquad June 2012
PROFESSIONAL DEVELOPMENT	 ♦ Certificate in the Effective Teaching Practice Framework, Association of College and University Educators (ACUE) June 2024
PUBLICATIONS	\diamond Books
	[B1] Salma Emara, Baochun Li, "Snefru: Learning Programming with C," Online Book, 2023.
	\diamondsuit Journal Articles (in reverse chronological order)
	[J3] Salma Emara, Fei Wang, Baochun Li, Timothy Zeyl, "Pareto: Fair Congestion Control with Online Reinforcement Learning," IEEE Trans- actions on Network Science and Engineering, vol. 9, no. 5, pp. 3731 – 3748, 2022.
	[J2] Salma Emara, Silas Fong, Baochun Li, Ashish Khisti, Wai-Tian Tan, Xiaoqing Zhu, John Apostolopoulos, "Low-Latency Network-Adaptive Error Control for Interactive Streaming," IEEE Transactions on Mul- timedia, vol. 24, pp. 1691 – 1706, 2022.
	[J1] Nada Atef, Salma Emara, Dina S. Eissa, Ahmed El-Sayed, Omar A. M. Abdelraouf, Nageh K. Allam. "Well-dispersed Au nanoparticles pre- pared via magnetron sputtering on TiO2 nanotubes with unprecedent- edly high activity for water splitting," Electrochem. Sci. Adv. 2020; e2000004.
	$\diamond~$ Papers in Conference Proceedings (in reverse chronological order)
	[C9] Salma Emara, Fatemeh Jazinizadeh, Hamid Timorabadi, "Connect- ing the Dots - Exploring the Benefits of Cross-Disciplinary Learning in a First-Year Programming Course," in the Proceedings of American Society for Engineering Education (ASEE) Annual Conference, Mon- treal, Canada, June 22 - 25, 2025.
	[C8] Raiyan Ishamam, Salma Emara, Hamid Timorabadi, "Work In Progress: TextMatch - A Semantically Enhanced Textbook Recommendation Sys- tem," in the Proceedings of American Society for Engineering Edu- cation (ASEE) Annual Conference, Montreal, Canada, June 22 - 25, 2025.
	[C7] Xinyuan Fan, Hamid Timorabadi, Salma Emara, "Work-in-Progress: TextCraft: Automated Resource Recommendation for Custom Text- book Creation," in the Proceedings of American Society for Engineer- ing Education (ASEE) Annual Conference, Portland, United States, June 23 - 26, 2024.
	[C6] Salma Emara, Daniel Liu, Fei Wang, Baochun Li, "Cascade: Enhanc- ing Reinforcement Learning with Curriculum Federated Learning and Interference Avoidance — A Case Study in Adaptive Bitrate Selec- tion," in the Proceedings of IEEE INFOCOM 2024 Workshop on Dis- tributed Machine Learning and Fog Networks (FOGML), Vancouver, Canada, May 20-23, 2024.

- [C5] Fei Wang, Salma Emara, Isidor Kaplan, Baochun Li, Timothy Zeyl, "Multi-Agent Deep Reinforcement Learning for Cooperative Edge Caching via Hybrid Communication," in IEEE International Conference on Communications (ICC), Selected Areas in Communications — Machine Learning for Communications and Networking Track, Rome, Italy, May 28 — June 1, 2023.
- [C4] Salma Emara, Fei Wang, Isidor Kaplan, Baochun Li, "Ivory: Learning Network Adaptive Streaming Codes," in the Proceedings of the 30th IEEE/ACM International Symposium on Quality of Service (IWQoS), 2022 (acceptance rate: 24.3 %).
- [C3] Salma Emara, Baochun Li, Yanjiao Chen, "Eagle: Refining Congestion Control by Learning from the Experts," in the Proceedings of IEEE INFOCOM 2020 (acceptance rate: 19.8 %).
- [C2] Silas L. Fong, Salma Emara, Baochun Li, Ashish Khisti, Wai-Tian Tan, Xiaoqing Zhu, John Apostolopoulos, "Low-Latency Network-Adaptive Error Control for Interactive Streaming," in Proceedings of the 27th ACM International Conference on Multimedia (MM '19), October 21 – 25, 2019, Nice (acceptance rate: 26.5 %).
- [C1] Salma Emara, Ayah Elewa, Omar Wasil, Kholoud Mostafa, Nada Abdelkhalek, Ahmed H. Soliman, Hassan Halawa, Malak ElSalamouny, Ramez Daoud, Hassanein Amer, Ahmed Khattab, Hany ElSayed, Tarek Refaat, "Heterogenous ITS Architecture for Manned and Unmanned Cars in Suburban Areas," in the Proceedings of the IEEE 23rd International Conference on Emerging Technologies and Factory Automation (ETFA), Torino, Italy, September 2018.
- ♦ Abstracts in Conferences (in reverse chronological order)
 - [A2] Salma Emara, "The Pedagogical Impact of Computer-Based Exams in Programming Courses," in the Proceedings of CEEA/ACEG (Canadian Engineering Education Association/Association Canadienne De L'Éducation En Génie), Montreal, Canada, June 18 - 21, 2025.
 - [A1] Salma Emara, Yvonne Yang, Riya Bansal, Xiaochong Wei, Baochun Li, "Work-In-Progress: Crafting an Interactive Online Textbook for Programming Students," CEEA/ACEG (Canadian Engineering Education Association/Association Canadienne De L'Éducation En Génie), Edmonton, Alberta, June 15 - 19, 2024.

\diamond Dissertation

[D1] **Salma Emara**, "Sequential Decision-Making in Networking Algorithms using Deep Reinforcement Learning," Ph.D. Dissertation, Department of Electrical and Computer Engineering, University of Toronto, June 2023.

\diamond Pending Patent

[P1] Zhenhua Hu, Timothy J. Zeyl, Salma Emara, Baochun Li, Fei Wang, "Method and Apparatus for Multiple Reinforcement Learning Agents in a Shared Environment," filed on December 31, 2021.

MENTORING University of Toronto, Toronto, Ontario, Canada The Edward S. Rogers Sr. Department of Electrical and Computer Engineering

 \diamond M.Eng Thesis Projects (ECE 2500)

	Raiyan Ishmam Thesis titled "Semantically Optimized Textbook	May 2024 – April 2025 Recommendation System"			
	Yuanrong (Rex) Han Thesis titled "Textbook-Specific Chatbot for Pro	May 2024 – January 2025 gramming Courses''			
	Elva (Xinyuan) Fan Thesis titled "Resource Recommendation for Cu	May 2023 – January 2024 stom Textbook Creation''			
	Zining Yin September 2019 – June 2020 Thesis titled "Reinforcement Learning to Refine Congestion Control"				
\diamond	Undergraduate Research Interns	C .			
·	Ada Selcuk	May 2025 – August 2025			
	Ibraheem El Sheikha	May 2025 – August 2025			
	Jinning Liu	May 2025 – August 2025			
	Vir Patel	May 2025 – August 2025			
	Warrick Tsui	May 2025 – August 2025			
	Nora Liu	May 2025 – August 2025			
	Jiahan (William) Wen Research topic "Semantically Smart Search Bar	May 2024 – August 2024 within Online Textbooks"			
	Rea Ahuja Research topic "Using ChatGPT to Translate C CS1"	May 2023 – Present ompiler-Error Messages in			
	Daniel Liu Research topic "Curriculum Federated Reinforc	May 2022 – August 2022 ement Learning''			
	Fei Wang Sept Research topic "Online Reinforcement Learning	ember 2019 – August 2020 for Congestion Control''			
	Isidor Kaplan Research topic "Reinforcement Learning for Ada	April 2020 – August 2020 aptive Streaming Codes"			
\diamond	Undergraduate Capstone Design Projects (ECE	496)			
	Meghna Ravikumar, Harshit Sohaney, Yun Jia Hao and Anne Chow 2024 – 2025				
	Project "Augmented Reality in Engineering Education (AREE)"				
Adrien Mery, Oyku Ugur, Joshua LaPointe and Bora Bayazit 2024 – 2025					
	Project "Project Teammate Finder App"				
	Ethan Hugh, Vaibhav Seshadri, Abhishek M	Iadan and Yassine Berrachid			
	2024 – 2025 Project "Course-Specific ChatBot"				
	Leather 2023 - 2024				
	Project "AI-Powered Personalized Teaching Assi	istant"			
	Maryam Younis, Mansi Patel, Krishna Pate Project "UofT Commuter Hub"	d 2023 – 2024			
\diamond	Engineering Science Thesis Projects (ESC 499)				

	Tianyang LiaoSeptember 2019 – AprilThesis titled "Refine Congestion Control Using PCC Expert"	2020
	Denzyl Layne September 2019 – April Thesis titled "Deep Q-Learning to Refine Congestion Control"	2020
PROFESSIONAL SERVICE	◊ Curriculum Matters Committee Member at the ECE Department the University of Toronto, July 2023 – Present.	ent at
	\diamond TPC Member or Reviewer for the following conferences and journal	als:
	Computing Education. ACM Special Interest Group on Com- Science Education (SIGCSE) 2024 and Canadian Engineering E- tion Association (CEEA) Conference 2024 – 2025.	puter duca-
	Multimedia, Networks and Communications. IEEE/ACM T actions on Networking (ToN) 2025, IEEE Transactions on Net Science and Engineering (TNSE) 2024, IEEE Globecom AINextGe Workshop 2024, Multimedia Systems (MMSys) 2023 and 2025, Transactions on Mobile Computing 2022, IEEE International Sy sium on Information Theory (ISIT) 2022, Computer Networks IEEE Transactions on Wireless Communications 2021, Multin Systems Journal 2020, IEEE Transactions on Mobile Computing	rans- work enWN IEEE mpo- 2021, nedia 2020.
	Machine Learning. Association for the Advancement of Artic Intelligence (AAAI) 2023 and 2024, International Conference or chine Learning (ICML) 2022, PAIR ² Struct: Privacy, Accountal Interpretability, Robustness, Reasoning on Structured Data Work at the International Conference on Learning Representations (I 2022.	ificial 1 Ma- bility, cshop CLR)
Scholarly Talks	T1] "Continual Reinforcement Learning", Invited Talk, University of Tor August 1, 2024	ronto,

[ST2] "Reinforcement Learning: Case Study on Stock Trading", Invited Virtual Online Talk, Hong Kong Polytechnic University, March 13, 2022