Shushan Arakelyan

PhD student at the University of Southern California

arakelyan.shushan@gmail.com

Education

2017 - present	**UNIVERSITY OF SOUTHERN CALIFORNIA** PhD in Computer Science Areas of interest: Machine learning for program analysis, and software engineering and cyber security applications
2015 - 2016	**UNIVERSITY OF CAMBRIDGE** MPhil in Advanced Computer Science, distinction Dissertation: Predicting word difficulty level for lexical acquisition (pdf: https://goo.gl/Xwf41A)
2010 - 2014	**RUSSIAN-ARMENIAN (SLAVONIC) UNIVERSITY** BSc in Applied Mathematics and Informatics, cum laude Dissertation: Probabilistic spell-checking for Armenian language. ACM-ICPC semifinalist

Professional experience

09/2022 - 03/2023	**MICROSOFT RESEARCH,** Seattle, WA, USA (Remote) Student Researcher Working on large language models for code and their generalization
05/2018 - 08/2018	**GOOGLE**, London, UK Software Engineering Intern Worked on Google Assistant. Researched and developed methods for descriptions of user profiles. My work was included in the paper accepted to SIGIR'19
10/2016 - 08/2017	**QUBE**, Yerevan, Armenia Research Engineer Researching, designing and prototyping state of the art algorithms for computer graphics, image processing, 3D optimization and face reenactment from RGB input. Technologies used: Tensorflow, OpenGL
06/2015 - 09/2015	**GOOGLE**, New York, NY, USA Software Engineering Intern Worked on Cloud Logging Infrastructure Modifying log processing routine to switch from MapReduce to FlumeC++ Technologies used: Bigtable, MapReduce and FlumeC++.
04/2013 - 05/2015	**ONE MARKET DATA**, Yerevan, Armenia Software Engineer Worked on company's OneTick line. Extending C++ and Java APIs, adding web API for tick data management and research Design and implementation of matrix-based cross-platform event processors
08/2012 - 03/2013	**QUESTRADE**, Yerevan, Armenia Junior C++ Engineer Worked on company's trading platform front end - transaction processing application. Technologies used: Qt

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Publications and pre-prints

"Exploring Distributional Shifts in Large Language Models for Code Analysis", Preprint, 2023 Arakelyan, S., Das, R.J., Mao, Y. & Ren, X.

"NS3: Neuro-Symbolic Semantic Code Search", In Advances in Neural Information Processing Systems 35, 2022, Arakelyan, S., Hakhverdyan, A., Allamanis, M., Hauser, C., Garcia, L. & Ren, X.

"Bin2vec: Learning Representations of Binary Executable Programs for Security Tasks" In the Cybersecurity Journal, Springer Nature, 2021. Arakelyan, S., Arasteh, S., Hauser, C., Kline, E. & Galstyan, A.

"Transparent, Scrutable and Explainable User Models for Personalized Recommendation" In the 42nd International ACM SIGIR Conference on Research & Development in Information Retrieval, ACM, 2019. Balog, K., Radlinski, F., & Arakelyan, S.

"Mining and forecasting career trajectories of music artists" In Proceedings of the 29th ACM International Conference on Hypertext and Social Media, ACM, 2018. Arakelyan, S., Morstatter, F., Martin, M., Ferrara, E. & Galstyan, A.

Awards and scholarships

2019	**ACSAC CONFERENCESHIP**	
	student travel grant	
2015-2016	**CAMBRIDGE TRUST ASSESSMENT SCHOLARSHIP**	
	for exceptional academic performance	
2015-2016	**LUYS FOUNDATION SCHOLARSHIP**	
	for exceptional academic performance	
2015	**ARMENIAN INTERNATIONAL WOMEN ASSOCIATION SCHOLARSHIP**	
	for public service and academic performance	
2014	**GOOGLE ANITA BORG MEMORIAL SCHOLARSHIP**	
	for exceptional academic performance and leadership	
2012	**REPUBLIC OF ARMENIA PRESIDENT'S EDUCATIONAL AWARD IN IT**	
	for excellent achievements in study and research	

Community service and volunteering

ORGANIZER KDD Deep Learning Day 2021, Machine Learning for Program Analysis (MLPA) 2020 Workshop

REVIEWER and PC ICLR 2021, NeurIPS 2021, MSR 2021, ICML 2021, 2020 (top reviewer), KDD 2019 Industry Track, ASONAM 2019, WiML workshop 2019

VOLUNTEER ICML 2019, Graduate Women in Engineering at USC (2020-21)