

GAREGIN GRIGORYAN, PH.D.

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WORK EXPERIENCE

Alfred University

Since August 2020

Assistant Professor in Computer Science and Math Division

- Designed and taught Computer Science courses: CSCI-156 and CSCI-157 in-person courses (Computer Science I and II), CSCI-156 online course (Computer Science I), CSCI-205 in-person course (Database Systems), CSCI-315 in-person course (Computer Networks), and CSCI-206 in-person course (Algorithm Design).
- Co-developed the curriculum for the university's new Computer Science program.
- Advised Computer Science major and minor undergraduate students.
- Co-advised graduate students from Rochester Institute of Technology for their research projects.
- University service: Served on multiple university committees. Chaired a faculty search committee.
- Research projects: Green data center networking; Network QoS and Machine Learning; AI performance prediction; Load balancing in containerized clusters; Mitigation of QUIC vulnerabilities in the data plane.
- Published and presented peer-reviewed papers at IEEE conferences.

Rochester Institute of Technology

May 2018 - August 2020

Adjunct Faculty Instructor

Research and Teaching Assistant

- Taught CSCI-651 online course (Foundations of Computer Networks).
- Research projects: FIB compression (aggregating and caching), integrating Kubernetes and RDMA, network security via programmable data plane.
- Held office hours for Computer Algorithms course. Graded weekly tests and exams.

Cisco Systems

June 2018 - December 2018

Software Engineer Intern

- Developed and executed performance tests for Mellanox NICs via DPDK, VPP and TREX with a different number of cores/threads enabled and other parameters.
- Developed a software to test Cisco-developed P4 switch. Executed various tests in P4 behavioral model environment (bmv2) and identified several bugs, including a one in the original bmv2 code. The software is still in use at Cisco.
- Administrated RedHat Linux infrastructure and NIC software on several machines of a Cisco Lab in RTP.

Clarkson University

January 2016 - May 2018

Research and Teaching Assistant

- Research projects: FIB compression (aggregation and caching), verification of routing tables, IoT security, green-energy aware routing via SDN and programmable data plane.
- Instructed and held office hours for Computer Science I and II, Operating Systems, Computer Networks courses. Received positive evaluation from students.

Diasoft (Moscow, Russia)

November 2012 - December 2015

Leading Implementation Specialist and Analyst

- Promoted from an implementation specialist to the leading implementation specialist position.
- Troubleshoot and configure complex multi-modal banking software. Conducted employee training.
- Performed a leading role in multiple projects. "Best employee-2014" awardee.

Mother See of Holy Etchmiadzin (Moscow, Russian diocese) *November 2008 - November 2012*

Layout and Web Designer

- Designed the monthly print newspaper.
- Designed and administrated the newspaper's website.

EDUCATION

Rochester Institute of Technology, Rochester, NY *May 2018 - August 2020*

Ph.D., Computer Science.

Clarkson University, Potsdam, NY *January 2016 - May 2018*

M.S., Computer Science. Transferred to Rochester Institute of Technology.

National Research Nuclear University 'MEPhI', Moscow, Russia *September 2007 - July 2012*

Diploma, Automated data processing and management systems.

PROFESSIONAL ACTIVITIES

Reviewer: IEEE/ACM Transactions on Networking; IEEE Access; IEEE Systems; IEEE OJ-COMS, Elsevier Computer Networks; Elsevier Future Generation Computer Systems; ASTESJ (Advances in Science, Technology and Engineering Systems Journal).

Conference talks: IEEE CCNC, Las Vegas, NV (2025); IEEE HPSR, Albuquerque, NM (2023); IEEE CANOPIE HPC, Online (2020); ACM HPDC, Online (2020); ACM CoNEXT, Orlando, FL (2019); IEEE NCA, Boston, MA (2018); IEEE INFOCOM, Honolulu, HI (2018).

Other activities: Talks at Bergen Forum, ChatGPT discussion group (both at Alfred University, 2023); "The Responsible Computer Science Challenge" grant (2022).

Travel grants: ACM CoNEXT at UCF (December 9-12, 2019); IEEE ICNP at UIC (October 7-10, 2019); ACM SIGCOMM at UCLA (August 21-25, 2017); NANOG 70 in Bellevue, WA (June 5-7, 2017); GENI Summer Camp at Boston University (May 24-27, 2016); "Oregon Cyber Security Day" workshop at University of Oregon (April 21-22, 2016).

Poster presentations: IEEE ICNP, Chicago, IL (2019), UIC; 1st Research and Project Showcase (RAPS), Potsdam NY (2017); GENI Engineering Conference 25, Miami FL (2017); 3rd Graduate Student Symposium, Potsdam, NY (2016);

Patents: Y. Liu and **G. Grigoryan**, US Patent 11,606,284; US Patent 10,917,338.

BOOK CHAPTER

Y. Liu, **G. Grigoryan**, Laurent L. Njilla, Charles A. Kamhoua, "Leverage SDN for Cyber Security Deception in Internet of Things" in "Modeling and Design of Secure Internet of Things", John Wiley & Sons, 2020, 704 pages, ISBN: 1119593379, 9781119593379,

<https://onlinelibrary.wiley.com/doi/book/10.1002/9781119593386>

PEER-REVIEWED CONFERENCE PUBLICATIONS

- **G. Grigoryan**, K. Penkowski, M. Kwon, "P4Kube: In-Network Load Balancer for Kubernetes", IEEE CCNC 2025, <https://ieeexplore.ieee.org/document/10976037>.

- **G. Grigoryan**, M. Kwon, "Towards Greener Data Centers via Programmable Data Plane", IEEE HPSR 2023, <https://ieeexplore.ieee.org/document/10148026>.

- S. Chuprov, L. Reznik, **G. Grigoryan**, "Study on Network Importance for ML End Application Robustness", IEEE ICC 2023, <https://ieeexplore.ieee.org/document/10279698>.

- S. Gupta, D. Gosain, **G. Grigoryan**, M Kwon, HB Acharya, "Simple Deep Packet Inspection with P4", IEEE ICNP 2021, demo abstract, <https://ieeexplore.ieee.org/document/9651973>.

- **G. Grigoryan**, M. Kwon, M. M. Rafique "Extending the Control Plane of Container Orchestrators for I/O Virtualization", IEEE CANOPIE HPC 2020, URL: <https://ieeexplore.ieee.org/document/9297047>.

- **G. Grigoryan**, Y. Liu, M. Kwon "Boosting FIB Caching Performance with Aggregation", ACM HPDC 2020, <https://dl.acm.org/doi/abs/10.1145/3369583.3392682>

- **G. Grigoryan**, Y. Liu, M. Kwon “iLoad: In-network Load Balancing with Programmable Data Plane”, ACM CoNEXT Student Workshop 2019, <https://dl.acm.org/doi/abs/10.1145/3360468.3366774>.
- C. Link, J. Saran, **G. Grigoryan**, M. Kwon, M. M. Rafique, W. R. Carithers “Container Orchestration by Kubernetes for RDMA Networking”, IEEE ICNP 2019, poster abstract, <https://ieeexplore.ieee.org/document/8888116>.
- **G. Grigoryan**, Y. Liu, “LAMP: Prompt Layer 7 Attack Mitigation With Programmable Data Planes”, IEEE NCA 2018, <https://ieeexplore.ieee.org/document/8548136>.
- Y. Liu, **G. Grigoryan**, “Toward Incremental FIB Aggregation with Quick Selections (FAQS)”, IEEE NCA 2018, <https://ieeexplore.ieee.org/document/8548101>.
- **G. Grigoryan**, Y. Liu, “PFCA: A Programmable FIB Caching Architecture”, ACM ANCS 2018, <https://dl.acm.org/doi/abs/10.1145/3230718.3230721>.
- **G. Grigoryan**, Y. Liu, M. Leczinsky, J. Li, “VeriTable: Fast Equivalence Verification of Multiple Large Forwarding Tables”, IEEE INFOCOM 2018, <https://ieeexplore.ieee.org/document/8485948>.
- **G. Grigoryan**, K. Bahmani, G. Schermerhorn, Y. Liu, “GRASP: a GReen energy Aware SDN Platform”, IEEE INFOCOM CNERT 2018,
- **G. Grigoryan**, Y. Liu, L. Njilla, C. Kamhoua, K. Kwiat, “Enabling Cooperative IoT Security via Software Defined Networks (SDN)”, IEEE ICC 2018 SAC Symposium, <https://ieeexplore.ieee.org/document/8423017>.
- **G. Grigoryan**, Y. Liu, “Toward a Programmable FIB Caching Architecture”, IEEE ICNP 2017, poster abstract, <https://ieeexplore.ieee.org/document/8117584>.

PEER-REVIEWED JOURNAL PUBLICATIONS

- **G. Grigoryan**, Y. Liu, M. Kwon, ”PFCA: a programmable FIB caching architecture”, IEEE/ACM Transactions on Networking, Volume 28 , Issue 4, 2020, <https://dl.acm.org/doi/10.1109/TNET.2020.3001904>.
- Y. Liu, **G. Grigoryan**, J. Li, G. Sun, T. Tauber, ”VeriTable: Fast Equivalence Verification of Multiple Large Forwarding Tables”, Computer Networks, Volume 168, 106981, 2019, <https://www.sciencedirect.com/science/article/abs/pii/S1389128618314105>.

COURSES TAUGHT

Tutoring: Algebra and Geometry.

Clarkson University: Computer Science I, Computer Networks, Operating Systems (lab instructor and TA), Computer Science II (TA).

Rochester Institute of Technology: Computer Networks (instructor/course designer) and Computer Algorithms (TA).

Alfred University: Instructor and designer of Computer Science I (online and in-person), Computer Science II, Database Systems, Computer Networking, Algorithm Design (all in-person).

SELECTED INDUSTRY PROJECTS

Cisco Systems (RTP, NC), 2018: Developing a test module for a P4 software switch.

Diasoft, FLEXTERA Accounting Project in VTB Capital (Moscow, Russia), 2015: Analyst for “Financial Instruments” Module.

Diasoft, FLEXTERA Back Office Project in International Investments Bank (Moscow, Russia), 2015: Lead implementation specialist for “Financial Markets” Module. Team leader of “Issuance” Module’s development and implementation teams.

Diasoft, FLEXTERA Front Office Project in Vietnamese International Bank (Hanoi, Vietnam), 2014: Senior implementation specialist for “Risk Management” module.

RESEARCH INTERESTS

Routing scalability, Software-Defined Networking, Programmable Data Plane, Green Computing, mitigating application layer attacks, Named Data Networking, RDMA, Machine Learning.

SKILLS

Programming languages: C, C++, Python, SQL, Shell, HTML, CSS, Java, Javascript, jQuery.

Computer networking: P4, FABRIC testbed, SDN, OpenFlow, RYU framework, RDMA.

Software/Software frameworks: MariaDB, MySQL, DMBS Oracle, IBM Websphere, Android Studio, Django Framework, Bootstrap, React, React Native, scikit-learn.

Languages: English, Russian, Armenian, French.