Nare Karapetyan

Curriculum Vitae

Address: 315 Main St. Columbia, SC, USA
Phone (mobile): +1-803-404-0659 **Email:** nare@email.sc.edu

EDUCATION

University of South Carolina, 2016-2021
PhD in Computer Science

American University of Armenia, 2013-2015
MSc in Computer and Information Science
Thesis: *"Area Coverage for Multi-robot Systems"*

Yerevan State University, 2008-2012
BSc in Applied Mathematics and Informatics

Research Interests: Multi-robot systems, path planning, machine learning, reinforcement learning, intelligent tutoring

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EXPERIENCE

American University of Armenia, Yerevan, Armenia
03/2016 -current **Research Associate:** Virtual Khachkar Museum
06/2015 - 05/2016 **Teaching Associate** of Discrete Mathematics, Theory of Algorithms, Network Theory courses
02/2015 - 09/2015 **Research Assistant:** Research in nonlinear optimizations
02/2015 - 05/2015 **Teaching Assistant** for "CIS 311: Theory of Algorithms" course

Improvis LLC, Yerevan, Armenia
05/2013 - 07/2014 **Software Engineer:** Design, implement and test pattern recognition, computer vision algorithms for assigned tasks.

SP LAB, Yerevan, Armenia; **ISP RAS,** Moscow, Russia
06/2012 - 11/2012 **Software Developer:** Research, design and implement machine independent optimizations for JavaScriptCore JIT compiler.
09/2011 - 05/2012 **Scholar:** Running weekly seminars. Python library tuning.

Instigate LLC, Yerevan, Armenia
01/2010 - 06/2011 **Part-time student at Software Engineering Training Center**: Daily classes on various topics in software engineering, implementation of assigned projects

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SKILLS

Programming: C/C++, Java, x86(x64) Assembler, bash scripting, octave
Libraries: STL, QT, OpenCV, Boost (GBL)
Tools, Technologies: GNU C++ compiler/debugger GCC and GDB, vim, SVN, git, LaTeX, QT creator, StarUML, Microsoft VS (10, 12), Arduino
Languages: Armenian (native), Russian (fluent), English (professional)

PROJECTS

- **Gamification in Education *(ongoing)*:** Research in the field of intelligent tutoring and gamification in education.
- **Solar energy production prediction:** Predicting an amount of energy produced by a solar electricity generating facility. Implemented in R using Gradient Boosting Machine (gbm) method. The mean error rate acquired is near to 0.18.
- **Multi-robot Area Coverage:** Research and development the approximation algorithms for multi-agent area coverage. Implemented method increases the utilization by 11% on average and decreases the

maximum coverage cost by 8%

- **Stress Model Calibration:** Research the latest direct-search optimizations for applying it on stress model calibration function.
- **Car License Plate detection for verification system**: Research the existing detection algorithms, finding appropriate solution within the scope of the problem; determine the key features for number plate detection. Training data creation. The accuracy of prediction acquired was 85%.
- **Computer Vision Algorithm Prototyping tool:** Design and implement system by which anybody with or without prior knowledge in programming can prototype their own computer vision algorithms.
- **Armenian Handwriting recognition**: Design and implement system. Find key features of handwritten characters.
- **Verification card code extraction**: Implement a system which detects a code in the given card, and recognizes it. Within this project was implemented digit recognition system using HOG features.
- **JavaScriptCore JIT compiler optimization:** Research for possible optimizations in JavaScriptCore JIT compiler. As a result of research GVN/PRE optimization was implemented.
- **Mine sweeper robot:** Design and build the mine detecting mobile robot
- **Howler messenger:** Design and implement client-server application, using POSIX threads and sockets. Write documentation - functional specifications.
- **Interruption Vector Table Changes:** Change INT 21H functions original purposes by changing IVT on real time DOS system.

AWARDS and SCHOLARSHIPS

07/2015	**Calouste Gulbenkian Foundation**, Short Term Conference Travel Grant
09/2013 – 06/2015	**American University Of Armenia (AUA)**, AUA/MoES tuition fee full scholarship.
2014	**RA Annual Presidential IT Award**, Best Master Student in IT sector
09/2011 – 05/2012	**SP LAB,** Yerevan, Armenia; **ISP RAS,** Moscow, Russia Scholarship awarded by ISP RAS to undertake research work in compiler technologies.
08/2011 – 12/2011	**ArmRobitics Competition,** Yerevan, Armenia Nominal Award for participation in competition aimed at designing and constructing mine detecting robot.
08/2009 – 12/2012	**Yerevan State University**. MoES tuition fee scholarship.

ADDITIONAL COURSES and PROGRAMS

Jan 01 - 14, 2017	**Bellairs Annual Field Trials and Workshop**, Holetown, Barbados
Feb 22 - 25, 2015	**IBM Watson training ,** Yerevan, Armenia
Sept 22 - 25, 2015	**CRIWG 2015 conference ,** Yerevan, Armenia
Aug 23 - Sept 4, 2015	**Machine Learning Summer School,** Kyoto, Japan
	Coursera, coursera.org
February 16, 2016	*Academic English: Writing* Specialization course by University of California, Irvine
February 4, 2016	*Python Data Structures* by University of Michigan
January 21, 2016	*Programming for Everybody (Getting Started with Python)* by University of Michigan
04/2013 – 06/2013	*Machine Learning* by Andrew Ng; Stanford University
04/2013 – 06/2013	*Introduction to Logic* by Michael Genesereth; Stanford University
01/2013 – 03/2013	*Algorithms: Design and Analysis*, Part 1 by Tim Roughgarden; Stanford University *Control of Mobile Robots* by Dr. Magnus Egerstedt; Georgia Institute of Technology
	Lomonosov Moscow State University, Moscow, Russia
02/2012 – 04/2012	Visiting Student, taken courses in Assembly language, Compilers, C programming and Algorithm Theory.

NON-ACADEMIC

Scuba diving - Swimming - Digital Photography - Environment