MICHAEL D. SHAH, PH.D. CURRICULUM VITAE

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EDUCATION

Tufts University *July 2017*
Ph.D.
Department of Computer Science Engineering

Tufts University *May 2013*
Master of Science
Department of Computer Science Engineering

The Ohio State University *June 2011*
Bachelors of Science
Department of Computer Science Engineering

ACADEMIC EMPLOYMENT HISTORY

- 2022-Present, Associate Teaching Professor, Northeastern University in Khoury College of Computer Sciences
- 2018-2022, Assistant Teaching Professor[1], Northeastern University in Khoury College of Computer Sciences
- 2017-2018, Lecturer, Northeastern University in College of Computer and Information Science
- 2017, Lecturer, Tufts University in Computer Science Engineering Department

WORK EMPLOYMENT HISTORY

- 2020, 2022 Part-time Consultant, Senior 3D Graphics Engineer, 4D Pipeline
- 2017 Part-time, Graphics Engineer, Oblong Industries
- 2016 Intern, Graphics Software Engineer, Intel Corporation.
- 2015 Intern, Compiler Engineer, Sony Computer Entertainment America
- 2014 Intern, Concurrency Engineer, Intel Corporation
- 2013 Helpdesk Representative, Tufts University
- 2013 Simulation and Modeling Programmer, Boston Medical Center
- 2011-2012 Research Assistant, Tufts University
- 2011 Intern, Validation Engineer, Intel Corporation

SCHOLARSHIP - PAPERS IN PROCEEDINGS OF REFEREED CONFERENCES

1. F Muzny, MD Shah. (March 2023). Teaching Assistant Training: An Adjustable Curriculum for Computing Disciplines. Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 1 (pp. 430-436). Toronto, Canada, 2023.

[1]Typical promotion to this rank takes 3 years at lecturer level.

2. Merrin, J., Shah, M. D. et al. (2022, August). Dynamic Vertex Hierarchies for Parallel View-Dependent Progressive Meshes. ACM Special Interest Group on Computer Graphics (SIGGRAPH). 2022. Vancouver, Canada, 2022.

3. Turcotte, A., Shah, M. D. et al. (2022, May). DrAsync: Identifying and Visualizing Anti-Patterns in Asynchronous JavaScript. International Conference on Software Engineering (ICSE). 2022. United States, 2022.

    - Winner of the **Best Artifact Award**.

4. Toppur, R. , & Shah, M.D. et al. (2021, November) Attack at Dawn: Cracking Codes with CUDA Teaching Parallelism. In Workshop on Education for High-Performance Computing (IEEE eduHPC) (pp. 43-500). St. Louis, United States.

5. Sun, Y. , Zhang, Y., Mosallaei, A., Shah, M.D., Dunne, C., Kaeli, D.. (2021). Daisen: A Framework for Visualizing Detailed GPU Execution. Computer Graphics Forum (2021) (pp 239-250. IEEEVIS.

6. Casey, Z., & Shah, M. D. (2020, November). Combating Run-time Performance Bugs with Performance Claim Annotations. In 2020 Symposium on Software Performance (SSP) (pp. 1-3), Leipzig, Germany, 2020.

7. Shah, M. D. (2019, September). Lib Metamorphosis: A Performance Analysis Framework for Exchanging Data Structures in Performance Sensitive Applications. In 2019 IEEE International Conference on Software Maintenance and Evolution (ICSME) (pp. 379-381). IEEE.

8. Sheffield, E. C., & Shah, M. D. (2018, October). Dungeon digger: Apprenticeship learning for procedural dungeon building agents. In Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts (pp. 603-610).

9. Shah, M. D., & Guyer, S. Z. (2018, July). Iceberg: dynamic analysis of Java synchronized methods for investigating runtime performance variability. In Companion Proceedings for the ISSTA/ECOOP 2018 Workshops (pp. 119-124).

10. Shah, M. D., & Guyer, S. Z. (2016, June). Iceberg: a tool for static analysis of Java critical sections. In Proceedings of the 5th ACM SIGPLAN International Workshop on State Of the Art in Program Analysis (pp. 7-12).

11. Shah, M. D., & Guyer, S. Z. (2016, October). An interactive microarray call-graph visualization. In 2016 IEEE Working Conference on Software Visualization (VISSOFT) (pp. 86-90). IEEE.

12. Shah, M. D.,& Guyer, S. Z. (2016, October). Critical section investigator: building story visualizations with program traces. In 2016 IEEE Working Conference on Software Visualization (VISSOFT) (pp. 136-140). IEEE.

SCHOLARSHIP - POSTERS PRESENTED AT REFEREED CONFERENCES

1. Shah, M.D. (2017). Iceflow A Dynamic and Data Flow Analysis of Critical Sections. Programming Language Design and Implementation (PLDI).

2. Shah, M.D. (2016). An Interactive Microarray Call Graph Visualization. In 2016 IEEE Working Conference on Software Visualization. IEEE VISSOFT.

GRANTS - EXTERNAL FUNDED RESEARCH GRANTS

Total External Grant Money at Northeastern Received: **$106,199.00**

- June 2023 - July 2024 - Mathworks Minigrant (PI) Received **$4000**

  - Funding provided by Mathworks to improve Computer Graphics curriculum using Matlab for visualization and building modular teaching units.
  - Current status: In Progress.
  - Outcomes: TBD.

- June 2020 - August 2020 - XSEDE NSF Empower Grant (PI) Received **$4500**
  - NSF XSEDE funding for one undergraduate students to work on "A Full Program Cache Profiler for High Performance Applications".
  - Current status: Project Completed.
  - Outcomes: One paper publication at Symposium on Performance.

- January 2020 - April 2020 - XSEDE NSF Empower Grant (PI) Received **$1500**
  - NSF XSEDE funding for one undergraduate students to work on program analysis and building performance assertion profiler.
  - Current status: Project goals successful, and grant to be continued.
  - Outcomes: One student successfully accepted to tier-1 research institution (Boston University).

- November 2019 - Present - Google Faculty Research Award (PI) Received **$75,000**
  - Proposal for an *Intelligent Data Structure Swap* to work on building dynamic analysis profiling tools. Funding to be used to support students, equipment, travel, and faculty support.
  - Current status: Paper has been written and to be submitted by end of 2021.
  - Outcomes: One student successfully accepted to tier-1 research institution (University of Utah).

- September 2019 - December 2019 - XSEDE NSF Empower Grant (PI) Received **$5700**
  - NSF XSEDE funding for three undergraduate students to work on semester long research projects on cache-oblivious data structures and program analysis. NSF XSEDE funding for one undergraduate students to work on program analysis and building performance assertion profiler.
  - Current status: Three students completed, one continuing.
  - Outcomes: Four independent research projects completed by students, one student continuing. Industry connection made with Kitware.

- May 2019 - August 2019 - XSEDE NSF Empower Grant (PI) Received **$5600**
  - NSF XSEDE funding for three undergraduate students to work on semester long research projects on cache-oblivious data structures.
  - Current status: Project goals successful, one paper submitted, and grant to be continued.
  - Outcomes: One student successfully accepted to tier-1 research institution.

- January 2019 - April 2019 - XSEDE NSF Empower Grant (PI) Received **$1500**
  - NSF XSEDE funding for two undergraduate students to work on semester long research projects on high performance computing.
  - Current status: Project goals successful, and grant to be continued.
  - Outcomes: One paper drafted.

- June 2018 - Present - NVIDIA GPU Grant (PI) Received **$1299**
  - Competitive grant funding for research funding for GPU Hardware.
  - Current status: Completed.
  - Outcomes: New hardware for performance engineering research projects acquired.
- June 2018 - August 2018 - Google Cloud Grants (PI) Received **$7100**
  - Grant funding provided by Google for GPU Computing.
  - Current status: Completed.
  - Outcomes: Students in my computer systems course got access to GPUs for new assignments.

GRANTS - INTERNAL FUNDED RESEARCH GRANTS

Total Internal Grant Money Received at Northeastern: **$3600.00**

- 2021 - Northeastern University Full-Time Faculty Professional Development Fund (FFPDF) award (PI) **$1800**
  - Competitive grant internal to Northeastern University for supporting professional development and scholarship.
  - Current status: To be utilized in 2022.
  - Outcomes: Will be traveling to the Game Developers Conference for professional development, networking, and curriculum development.
- 2019 - Northeastern University Full-Time Faculty Professional Development Fund (FFPDF) award (PI) **$1800**
  - Competitive grant internal to Northeastern University for supporting professional development and scholarship.
  - Current status: Completed.
  - Outcomes: Utilized to build research equipment for performance engineering and to be utilized by students as a remote research machine.
- Fall 2016 - Tufts University Research Competition Awardee **$800**
  - Grant funding provided by Google for GPU Computing.
  - Current status: Completed.
  - Outcomes: Students in my computer systems course got access to GPUs for new assignments.
- Spring 2016 - Tufts University Research Competition Awardee **$400**
  - Grant funding provided by Google for GPU Computing.
  - Current status: Completed.
  - Outcomes: Students in my computer systems course got access to GPUs for new assignments.

GRANTS - UNSUCCESSFUL GRANT PROPOSALS

Feb. '19, Mathworks Mini-grant (Internal to Northeastern)	(Applied - not received) $17,400
Nov '19, Mozilla Research Grants 2019H2	(Applied - not received) $40,000
June '18, Epic Games Megagrant	(Applied - not received) $50,000

GRANTS - GRANT REVIEWING COMMITTEES

- 2021 XSEDE Empower Grants Reviewer 2021
  - Reviewed grant applications for undergraduate research for the XSEDE NSF Empower program in collaboration with the Shodor Institute and the National Science Foundation (NSF).

TEACHING - TEACHING EXPERIENCE OF MICHAEL D. SHAH

Note: ***Bolded and italicized*** courses were newly created by me. **Bold course titles** indicate courses in which 75% or more of the materials were created from scratch. Non-bolded courses were inherited or co-taught.

- ***CS 4910 Introduction to Non-interactive Rendering Techniques***, Su '21
  - Developed from scratch a course on an introduction to offline rendering (i.e. ray tracing) techniques.
Course Statistics		
Term and Year	Number of Students	Overload
Summer 21	6	Yes
Summer 21	21	Yes
- **CS 3520 Programming C++**. Su '21
  - Developed from course on teaching modern constructs, features, tooling, and projects in C++.
Course Statistics		
Term and Year	Number of Students	Overload
Summer 21	40	Yes
Fall 22	47	Yes
- **CS 5008 Data Structures, Algorithms, and Their Applications Within Computer Systems**, Sp '21, Sp' 22
  - (Graduate, ALIGN Program) Introduction to data structures and algorithms within the context of computer systems taught in C.
  - My specific role in this course has been in leading the development of this new course.
Course Statistics		
Term and Year	Number of Students	Overload
Spring 21	68	No
Spring 22	87	No
- **CS 5500 Foundations of Software Engineering**, Northeastern University Sp '20, Fa '20, Fa '21
  - (Grad) Designed course on building software learning design patterns, Git, Object-Oriented Programming, UML, and implemented in C++.
Course Statistics		
Term and Year	Number of Students	Overload
Spring 20	53	No
Fall 20	42	No
Fall 21	37	No
Fall 21	48	No
Spring 23	In progress	No
Spring 23	In progress	No

- ***CS 4910/7680 Performance Engineering***, Northeastern University Su '20
  - (Undergrad/Grad) Developed first iteration of course on developing software for performance. This can be seen as a second computer systems course, and it focuses on also teaching students how to perform research in Systems.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Summer 20	16	Yes

- ***CS 4955 Teaching Computer Science***, Northeastern University Sp '20
  - (Undergrad) Developed first iteration of course on how to teach computer science.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Spring 20	5	Yes

- **CS 4850/5850 Building Game Engines**, Northeastern University Sp '18, '19, '21
  - (Undergrad/Grad) Designed course on building large-scale game engines from scratch in C++.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Spring 18	36	No
Spring 19	43	No
Spring 21	51	No
Spring 23	In progress	No

- **CS 5006 Computer Algorithms**, Northeastern University Sp '19, Su '19
  - (Graduate, ALIGN Program) Introduction to algorithms course in C.
  - A special note that the summer of 2019 I flew to San Francisco every week from Boston to teach at our San Francisco campus.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Spring 19	59	No
Summer 19	14	Yes

- **CS 4300/5310 Computer Graphics**, Northeastern University Sp '18, Fall '19, Su '19, Su '20, Su '21, Fa '21, Sp '22
  - (Undergrad/Grad) Introductory course to traditional rasterized computer graphics and ray tracing.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Spring 18	25	No
Fall 19	48	No
Summer 19	28	Yes
Summer 20	24	Yes
Summer 21	40	Yes
Fall 21	42	No
Spring 22	56	Yes
Summer 22	51	Yes
Spring 22	51	Yes
Fall 22	75	No

- **CS 3650 Computer Systems**, Northeastern University Fa '17,'18,'19
  - (Undergrad) Introductory course on systems programming concepts: C, assembly, operating systems, memory management, threads.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Fall 17	26	No
Fall 18	49	No
Fall 18	55	No
Fall 19	49	No
Fall 19	88	No

- **CS 5600 Computer Systems, Northeastern University**, Su '18
  - (Grad) Advanced systems programming course covering operating systems, memory management, and multiprocessing culminating in a final research project and research paper.
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Course Statistics		
Term and Year	Number of Students	Overload
Summer 18	34	Yes

- **CS 5007 Computer Systems**, Northeastern University Su '18, Sp '19, Su '19
  - (Graduate, ALIGN Program) Introductory course on systems programming concepts: C, assembly, operating systems, memory management, threads.
  - A special note that the summer of 2019 I flew to San Francisco every week from Boston to teach at our San Francisco campus.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Summer 18	26	Yes
Spring 19	56	No
Summer 19	16	Yes

- CS 1802 Discrete Mathematics Seminar, Northeastern University Fa '17
  - (Undergrad) Introduction to number systems, logic, probability, modular arithmetic, sorting, graph theory, induction, and cryptography.
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Course Statistics		
Term and Year	Number of Students	Overload
Fall 17	113 (6 sections)	Yes (2 of 6 sections)

- **CS 5340 Human-Computer Interaction, Northeastern University**, Fa '17
  - (Grad) Introduction to designing software for humans, designing user studies, culminating in a final research project.
  -

Course Statistics		
Term and Year	Number of Students	Overload
Fall 17	42	No

- **Comp 11 Introduction to Computer Science**, Tufts University, Lecturer Su '17
  - (Undergrad) Introduction to programming using C++. I redeveloped the introduction to teach Modern C++.

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Course Statistics		
Term and Year	Number of Students	Overload
Summer 17	23	Yes

Additional Teaching

- Fall 2016 Concurrency (Undergrad), Teaching Fellow and Curriculum Developer, Tufts University
  - Participation in this course was after completing a selective Graduate Institute For Teaching (GIFT) intensive Fellowship over three full weeks on teaching.

TEACHING - MASTERS THESES AND PROJECT COMMITTEES

- Su '20 - Sp '21, Masters Thesis Research, Yuyou Fan, Northeastern University
  - Title: Data Structure Swap with LLVM
  - Outcome: Paper to be submitted at end of 2021, student entered Ph.D. program at University of Utah.
- Fa '20, Masters Thesis Reading Member, Shereen Bellamy, Northeastern University
  - Title: Can Mental Workload in EEG Tasks Be Classified Using Machine Learning Algorithms?
- Fa '18 - Sp '19, Ge Zhu, Masters Computer Science Project, Northeastern University
  - Title: Art styles Rendering Techniques Survey
- Sp '18 - Fa '18, Evan Sheffield, Masters Computer Science Project, Northeastern University
  - Title: Dungeon Digger: Apprenticeship Learning for Procedural Dungeon Building Agents
  - Outcome: Resulted in publication at SIGPLAY 2018.
- Fa '17 - Sp '18, Suraj Gutti, Masters Computer Science Project, Northeastern University
  - Title: Usability Of Incorporating a Story-line in an Augmented Reality Educational Application
  - Outcome: Completed project and student gainfully employed out of school.
- Fa '17 - Sp '18, Shubham Gupta, Masters Computer Science Project, Northeastern University
  - Title: Learning with Augmented Reality: A Platform for Higher Education Learning Applications
  - Outcome: Completed project and student gainfully employed out of school.

TEACHING - MENTORSHIP AND DIRECTED STUDIES

- Sp '23, Masters Thesis, Jonathon 'Yoni' Merrin, Northeastern University
  - Title: TBD
  - Outcome: Thesis defended, student entering Ph.D. program at TBD
- Sp '22, Masters Directed Study, Jonathon 'Yoni' Merrin, Northeastern University
  - Title: Improving the performance of real-time Progressive Meshes Simplification
  - Outcome: Publication of peer-reviewed poster at SIGGRAPH 2022
- Fa '21, Undergraduate Directed Study, Jacqueline Allex, Northeastern University
  - Title: Improving on Progressive Meshes with Locality

  - Outcome: Student landed job at Disney and Electronic Arts
- Fa '19 - Su '21, Mark Aldrich, Northeastern University
  - Title: *Anonymous paper title*
  - Outcome: Paper in review at Tier 1 conference for potential 2022 publication
- Su '21, Graduate Research Mentor Fellowship (Funded), Gail Renee Pinto, Northeastern University
  - Title: Building an Interactive Performance Debugger
  - Outcome: Work presented at Khoury Summer Research Forum.
- Sp '21, Undergraduate Research, Rahul Toppur, Northeastern University
  - Title: Attack at Dawn: Cracking Codes with CUDATeaching Parallelism
  - Outcome: Work accepted for publication in EduHPC.
- Su '20, Undergraduate Research, Mason Wu and Xinyi Luo, Northeastern University
  - Title: Concurrency Lock Profiler
  - Outcome: Connection and internship opportunity explored at Kitware.
- Sp' - Su '20, Undergraduate Research, Zachery Casey, Northeastern University
  - Title: Performance Claim Annotations
  - Outcome: Publication at SSP 2020, student accepted to Ph.D. program at Boston University
- Sp '20, Graduate Research Fellowship, Derek Ching, Northeastern University
  - Title: Concurrency Profiler
  - Outcome: Student accepted to Khoury Fellowship Program, student gainfully employed after.
- Fa '19, Directed Study, Robert Carney, Northeastern University
  - Title: LLVM Data Structure Profiler
  - Outcome: Student gainfully employed after project.
- Su '19, Xiangxi Guo, Northeastern University
  - Title: Parallel Cache Oblivious Algorithms and Data Structures
  - Outcome: Student accepted to Master program for graduate school in CS.
- Su '19, Directed Study, Robert Carney, Northeastern University
  - Title: LLVM Data Structure Profiler
  - Outcome: Paper submission (rejected), project continued on another grant.
- Sp '19, Directed Study, Trevor Day, Northeastern University
  - Title: Real-time Ray Tracing using OpenCL
  - Outcome: Student employed at Demiurge Studios after project.
- Sp '19 - Su '19, Directed Study with Faridat Yusuf, Northeastern University
  - Title: CUDA GPGPU Programming Edge Detection Algorithms
  - Outcome: Presentation at Northeaster's 2020 RISE Forum
- Su '18, Directed Study with Amanda Fode, Northeastern University

- Title: Volume Visualization using WebGL
- Outcome: Project completed.

TEACHING - MENTORSHIP THROUGH EXTERNAL PROGRAMS

- Su '22, DREAM Mentor
  - Selected from Northeastern as a mentor for the DREAM (Distributed REsearch Apprenticeships for Masters) program to encourage students with non-traditional CS backgrounds to get involved in research.
  - Outcome: Mentored 5 students in summer research from the Colorado School of Mines in their pursuit to start research.

SERVICE TO INSTITUTION - COLLEGE SERVICE

Note: Khoury College of Computer Science does not have departments or individual schools

Northeastern University

- 2022-2023 Area Chair - Teaching Innovation
  - New chair position created to lead entire network (14 campuses) innovating in best teaching practices, and leading faculty in designing new programs and initiatives to improve quality of live and quality of education in college. Examples of responsibilities include serving on award committees, seeking grants, running events (virtual and in-person) and workshops in the college.
- 2018-2022 Undergraduate Committee
  - Responsible for overseeing all undergraduate courses and degree programs offered in the College. The committee approves all new undergraduate course proposals and degree programs, and maintains the curricula for all existing Khoury degree programs.
- 2021-2023 Teaching Assistant Committee
  - Responsible for overseeing policy of how we hire, train, and integrate teaching assistants into courses. Helped develop best practices from 'Khoury Scholars' program I developed.
- 2019-2021 Khoury Awards Committee
  - Responsible for taking part in selecting, voting, and organizing awards primarily for undergraduate students.
- 2019-2022 Systems Advisory Committee
  - Responsible for communicating, discussing, and working with the College's Systems group to deploy new initiatives.
  - Note: 2021-2022 I served as **chair of the committee**.
  - 2019-2021 Hodgkinson Award Selection Committee
    - Responsible for selecting the Hodgkinson award for the university with a selection committee from Khoury College.
- 2018-2020 Full-time Non-tenure Track Hiring Committee
  - Responsible for hiring teaching faculty, which includes reviewing materials, attending lectures, and providing hiring recommendations.
- 2018-2019 Director of Khoury Teaching Scholars

- Role is to develop a new program for training and mentoring undergraduate teaching assistants.
- Note, this role has since evolved into a seminar course and now a committee.

SERVICE TO INSTITUTION - UNIVERSITY

- Summer 19 LLVM Joint MIT and Northeastern Seminar
  - Co-organized with T.B. Schardl and Daniele Vettorel a series of workshops on LLVM, Systems, and Program Analysis tools.
  - Eight Workshops ran the duration of the summer with participants involved in bioinformatics, computer science, and electrical engineering participating (both students and industry)
- Global Game Jam 2018
  - I aided in the annual global game jam (weekend hackathon for games) that involved students across the university and community members in greater Boston.

SERVICE TO PROFESSION

- ISOCPP SG20 (2019)
  - Study group regarding best practices for teaching C++ to new, intermediate, and advanced, learners.

SERVICE TO PUBLIC - CONFERENCE ORGANIZATION

- CPPCON 2022, 2021 **Software Design Program Co-Chair**
  - 2022, 2021, Co-created the initial organization of a new Software Design Track for the conference. Shared responsibilities as co-chair.
  - Talks are freely available on YouTube with nearly 107,500 (as of Nov. 22, 2022) subscribers viewing `https://www.youtube.com/user/CppCon`

SERVICE TO PUBLIC

- Public Educational YouTube Content
  - 2016 - Present, Created a public youtube channel `https://www.youtube.com/c/MikeShah` to distribute educational content freely.
  - Currently 3,888 subscribers as of November 22, 2022.

SERVICE TO PUBLIC - PROGRAM COMMITTEES

- C++ North 2023 - Program Committee
  - Double-blind review of 24 conference submitted talks.
- SIGGRAPH 2022 External Reviewer (Posters)
  - Invited as an external reviewer for extended abstracts for posters.
- C++ on the Sea 2022, 2023 Reviewer
  - Double-blind review of over 40 conference submitted talks.
- CPPCON 2022, 2021, 2020, 2019 Program Committee Member
  - 2021, 2021, 2020 Additional responsibilities reviewing for the Back to Basics Track

- SIGCSE 2022, 2021, 2020, 2019 Main Program Committee Paper Reviewer
  - 2023 Nifty Assignment Program Committee
- PLDI 2020 Artifact Evaluation Committee
  - Served as a reviewer
- EuroLLVM 2020 Program Committee Member
  - Served as a reviewer for talks.
- ECOOP 2019 Poster Committee Reviewer
  - Served as a reviewer for the poster session.
- VISSOFT 2018 Program Committee Paper Reviewer
  - Served as a reviewer for papers.

PROFESSIONAL DEVELOPMENT - PROFESSIONAL ORGANIZATION MEMBERSHIP

- Association of Computing Machinery Professional Member (2008 - Present)
  - ACM SIGGRAPH Chapter member – participating in annual SIGGRAPH Educators forum for discussing pedagogy.

PROFESSIONAL DEVELOPMENT - CONFERENCE ACTIVITY/PARTICIPATION

Note: This section omits attendance at conferences where I gave talks or had published research. I have attended every conference where I have published or given a talk.

- 2018,2021,2022 SIGGRAPH, The premier forum for research and computer graphics content.
- 2018,2022,2023 Game Developers Conference (GDC) serving as a Conference Associate (CA).
- 2020 Summit on Data Oriented Design, organized by Rochester Institute of Technology in collaboration with Unity3D
- 2017 ECOOP Summer School on Programming Languages scholarship
- 2017 Programming Language Design and Implementation (PLDI) Student Volunteer
- 2017 CPPNow Student Volunteer
- 2016 Programming Language Design and Implementation (PLDI) Student Volunteer
- 2015 Programming Language Design and Implementation (PLDI) Student Volunteer
- 2013 Programming Language Design and Implementation (PLDI) Student Volunteer

PROFESSIONAL DEVELOPMENT - INVITED TALKS AT REFEREED VENUES

Talks listed here all go through a peer review process by an external program committee.

- 2022, DConf Online 2022 — Engineering a Ray Tracer, The Next Weekend in DLang
- 2022, Handmade-Seattle 2022 — Introduction to Memory Allocator Design and Implementation
- 2022, CPPCON 2022 — Software Design Track: The Observer Pattern
- 2022, CPPCON 2022 — Back to Basics: Debugging
- 2022, Core Cpp 2022 — Introduction to Smart Pointers and Why

- 2022, DConf 2022 — Ray Tracing in (Less than) One Weekend with Dlang
- 2022, C++ on Sea 2022 — Beginners Guide to C++'s Best Kept Secret - std::algorithm
- 2022, ACCU 2022 — How I Taught Modern C++ - One Pixel at a Time
- 2021, CPPCON 2021 — The Factory Design Pattern
- 2021, CPPCON 2021 — The Necessity of Concurrency
- 2021, CPPCON 2021 — The Power of Pointers
- 2021, NDC Tech Town 2021 — How I Taught Modern C++ - One Pixel at a Time (*Withdrawn due to travel restrictions with Covid*)
- 2021, Inaugural Illinois Summer Teaching Workshop — Evolving the Course Website and Lecture for Online Teaching
- 2020, CPPCON in Auroroa, Colorado — Back to the Basics: Design Patterns
- 2020, EuroLLVM in Paris, France — Implementing Common Compiler Optimizations From Scratch (Accepted–conference cancelled for COVID-19)
- 2019, ACCU Autumn in Belfast, UK — Introduction to Cache Oblivious Algorithms
- 2018, CPPCON in Bellvue, WA — Let's Intercept OpenGL Function Calls...for Logging!
- 2018, FOSDEM in Brussels, Belgium — Introduction to LLVM
- 2013, PLDI(Fun and Interesting Thoughts) in Seattle, WA — Hot Streak Cold Streak Programming

PROFESSIONAL DEVELOPMENT - INVITED TALKS

Talks listed here were talks in which I was directly invited to speak at.

- 2023, January at Massachusetts Institute of Technology — Introduction to Phobos Library in D - D language IAP Programming Workshop
- 2021, May at Boston Fusion — Game Engines - What problem at you trying to solve?
- 2020, Khoury Tech Talks — Performance Engineering and Program Analysis
- 2019 Northeastern ACM Student Chapter — Introduction to Program Analysis
- 2017, February at Massachusetts Institute of Technology — Introduction to LLVM Performance Engineering Course Lecture
- 2016, November at Massachusetts Institute of Technology — Profile Guided Optimizations, LLVM Seminar
- 2016, October at Massachusetts Institute of Technology — Introduction to LLVM, LLVM Seminar
- 2016, May at Pint of Science — How do Computers Compute so Fast in Cambridge, MA

PROFESSIONAL DEVELOPMENT - CAMPUS OR DEPARTMENTAL TALKS

- July 2019 at Northeastern — Joint Northeastern and MIT Introduction to Program Analysis - LLVM/Systems Seminar Series
- June 2019 at Northeastern — Joint Northeastern and MIT Introduction to Clang - LLVM/Systems Seminar Series
- June 2019 at Northeastern — Joint Northeastern and MIT Introduction to LLVM - LLVM/Systems Seminar Series

- October 2018 at Northeastern — Teaching Seminar Talk on Introduction to Github Classroom
- March 2018 at Northeastern — Guest Lecture for Nathaniel Tuck's Systems Course
- November 2015 at Tufts — Guest Lecture Concurrency (Undergraduate), GPGPU programming
- April 2015 at Tufts —Guest Lecture Game Design (Graduate Level), Physics and Unity3D
- March 2015 at Tufts — Guest Lecture Game Design (Graduate Level), C# and Unity3D
- April 15, 2014 at Tufts — Guest Lecture Computer Graphics (Graduate Level), Programming with Shaders Using OpenGL.
- April 22, 2014 at Tufts — Guest Lecture Computer Graphics (Graduate Level), GPU Programming with OpenGL and CUDA.
- April 2013 at Tufts — Guest Lecture Human Computer Interaction (Graduate Level), Looking into the Future of HCI

PROFESSIONAL DEVELOPMENT - AWARDS, SCHOLARSHIPS, AND HONORS

- 2022 **College Teacher of the Year** - Khoury College of Computer Sciences
  - Awarded to one faculty (out of over 100 faculty at multiple campuses) each year demonstrating excellence and leadership in teaching.
- 2019 Northeastern University Teaching Inquiry Fellow
  - A year long series of teaching workshops, readings of literature, and development of pedagogy.
- 2016 Tufts Ignite Research Talks, 3rd Place Winner
  - Campus wide research talk presentation awardee
- 2016 Tufts Graduate Institute for Teaching Fellowship (GIFT) Awardee
  - Selective program with an intensive series of teaching workshops, and teaching during the following semester.
- 2016 Tufts Outstanding Graduate Student Organization (Founder)
  - Computer Science League of Learning (CSLOL) was a newly found group for graduate students.
- 2015 Tufts Ignite Research Talk, 3rd Place Winner
- 2015 Outstanding Graduate Student Service Award
- 2014 Programming Languages Mentoring Workshop Scholarship Awardee

PROFESSIONAL DEVELOPMENT - EXTERNAL CONSULTING

- 2023. Undo
  - Created a course on debugging in GDB at Undo's "GDB Academy" targeted at programmers with intermediate level debugging skills.
- 2020, 2022. 4D Pipeline
  - Worked as a Senior 3D Graphics Engineer on state of the art research and development projects for undisclosed clients in the field of computer graphics. Delivered two products available on the market for clients.
- 2020. CUDA Course Development for Shodor Institute for the 2020 BlueWaters PetaScale Institute

– Developed in collaboration with an interdisciplinary team of chemists, physicists, and computer scientists a high school and undergraduate curriculum for teaching high performance computing. Public deliverables are found here: https://github.com/MikeShah/CUDA