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# EMAD AGHAEI

Springfield, MA

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## RESEARCH INTERESTS

Software engineering, programming tools, human-computer interaction, crowdsourcing.

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## PROFESSIONAL EXPERIENCE

**Lead Software Engineer** at [Thoughtworks](#) 📍 MA, USA *Nov 2021 - Present*  
I research and design how we can help software development teams to be more productive. It includes tools, platform, and approaches.

**Research Software Engineer** at [Developers Experience \(DevX\) lab](#) *Aug 2017 - Present*  
I work at the intersection of software engineering and human-computer interaction. I study the interaction between developers and programming development tools. My research goal is to make developers more productive by providing better development tools and approaches. To achieve this goal, my research involves understanding developer behaviors, identifying problems, and designing tools and approaches to help with those problems using various human-centered methods at each stage.

**Research Intern** at [JetBrains](#) *Apr 2021 - Aug 2021*  
Design, develop, evaluate a plugin to help IntelliJ IDEA users. It clusters usages by the similarity of their surrounding context might enable developers to more rapidly understand how to use a function. Piloted the [Cluster Usages plugin](#) in JetBrains company.

**Senior Software Engineer** at ISC *Dec 2015 - Jul 2017*  
R&D in the area of large scale software, Led development team, built a large scale financial mobile banking software.

**Lead Software Engineer** at CityDI *Apr 2013 - Nov 2015*  
R&D in software engineering area, Led development team, built and maintained multiple software projects.

**Researcher** at [Network Systems Research Lab , UT](#) *Sep 2011 - Feb 2017*  
Researched on wireless networks, remote health monitoring, smart homes.

**Software Developer** at [Saamaneh Paytakht](#) *Sep 2010 - Mar 2012*  
Developed and maintained an electronic health records software.

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## EDUCATION

**George Mason University, Fairfax, VA, USA** *Aug 2017 - Present*  
Ph.D. in Computer Science, Department of Computer Science.

**University of Tehran (UT), Teh, IR** *Aug 2011 - Mar 2014*  
M.Sc. in Information Technology Engineering, Network Science and Technology Group.

**Shiraz University of Technology, Shiraz, IR** *Aug 2005 - Jun 2010*  
B.Sc. in Information Technology Engineering, Department of Computer and IT.

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## PUBLICATIONS

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(As of May 31, 2022) H-Index: 4; Citations: 417

### Journal Articles

- [J1] M. Davis, **E. Aghayi**, T. D. LaToza, X. Wang, B. Myers, J. Sunshine, "What's (not) Working in Programmer User Studies?", Under review, TOSEM, 2022. (Under submission)
- [J1] **E. Aghayi**, T. D. LaToza, "How Does Microtasking Impact Programming?", Empirical Software Engineering, 2023.
- [J2] **E. Aghayi**, T. D. LaToza, P. Surendra, S. Abolghasemi, "Crowdsourced Behavior-Driven Development", Journal of Systems and Software, 2020.
- [J3] M. Hoseini, **E. Aghayi**, F. Saghafi "A multidimensional model of knowledge sharing behavior in mobile social networks." Kybernetes, 2018.
- [J4] S. Majumder, **E. Aghayi**, M. Noferesti, H. Memarzadeh-Tehran, T. Mondal, Z. Pang, M. Deen "Smart homes for elderly healthcare—Recent advances and research challenges.", Sensors, 2017.

### Refereed Conferences papers

- [C1] Shinobu Saito, Yukako Iimura, **E. Aghayi**, T. D. LaToza "Can Microtask Programming Improve Work-time Flexibility in Industrial Projects?", ESEC/FSE 2022 Industry Papers. (Under review)
- [C2] Shinobu Saito, Yukako Iimura, **E. Aghayi**, T. D. LaToza "Does Microtask Programming Work in Industry?", ESEC/FSE 2020 Industry Papers. (acceptance rate: 36%) (distinguished research award from Information Processing Society of Japan)
- [C3] **E. Aghayi**, A. Massey, T. D. LaToza "Find Unique Usages: Helping Developers Understand Common Usages", VL/HCC 2020. (acceptance rate: 30%)
- [C4] **E. Aghayi**, M. Khansari, H. Memarzadeh-Tehran "A new back-off mechanism for the S-MAC protocol with applications in healthcare." International Symposium on Telecommunications, 2014.

### Refereed Demos, Posters, and Other Papers

- [O1] **Emad Aghayi**. "Large-Scale Microtask Programming.", GC VL/HCC 2020.
- [O2] Dubey Aarushi, Thomas LaToza, and **Emad Aghayi**. "Crowd Microservices Hackathon: Utilizing Crowdsourcing for Microtask Programming on a Large-Scale." Journal of Student-Scientists' Research (2019).

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## ACADEMIC SERVICES

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### Undergraduate Mentees:

Ankit Roy, Raunak Daga, GMU ASSIP program 2020

Aarushi Dubey, GMU ASSIP program 2019

### Reviewer:

CSCW: journal of computer supported cooperative work 2019

Sensors: journal on the science and technology of sensors and biosensors 2019

Kybernetes: international journal of cybernetics, systems and management sciences 2019

Bioengineering: journal on the science and technology of bio-engineering 2019

INTERACT: international conference on human-computer interaction 2019

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## TEACHING

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**Teaching Assistant**, George Mason University, Fairfax, VA, USA 2017  
Course: Object Oriented Programming (CS 211)

**Instructor**, Azad University, Teh, IR 2015  
Course: Introduction to Software Engineering

**Instructor**, Azad University, Teh, IR 2015  
Course: Operating Systems

**Teaching Assistant**, University of Tehran, Teh, IR 2014  
Course: Wireless Sensor Network

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## AWARDS AND HONORS

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Won the Distinguished Research Award from Special Interest Group on Software Engineering 2020

Nominee for Most Influential Paper Award, Symposium on Visual Languages and Human-Centric Computing 2020

Won the **first place** among 400 participants in PatriotHacks hackathon 2019

Graduate Research Assistant, George Mason University, *Fall 2017 - present*

Full tuition waiver scholarships, Volgenau School of Engineering, GMU *Fall 2017 - present*

Travel Grant to attend International Conference on Smart Sensors and Application 2015

Travel Grant to attend International Symposium on Telecommunications 2014

Member of the National Organization for Development of Exceptional Talents (NODET) 2000-2004

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## FORMAL PRESENTATIONS

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**Morgan State University, School of Computer**, Virtual 2021  
Title: Microtask Programming

**Symposium on Visual Languages and Human-Centric Computing (VL/HCC)**, Virtual 2020  
Title: Large-scale Microtask Programming

Title: Find Unique Usages: Helping Developers Understand Common Usages

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<b>International Conference on Smart Sensors and Application</b> , Universiti Teknologi Malaysia, Malaysia ,Kuala Lumpur Title: Wireless Body Area Networks	2015
<b>International Symposium on Telecommunications</b> , IR, Tehran Title: MAC protocol for WSNs	2014
<b>University of Tehran</b> , IR, Tehran Title: MAC protocol for WSNs	2014

## SOFTWARE DEVELOPED

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**Crowd Microservices**, a cloud-IDE for microtask programming developed by Express.js, Angular, Firebase ([URL](#))

**Mobile Banking**, a client and server software allows customers to bank on the go, view account balance, generate Debit Card PIN, transfer funds, pay bills and so much more. Implemented by Java, Spring, Hibernate, Oracle Database, Android. **It has 10+ million daily active users.**

**Find Unique Usage**, a plugin for IntelliJ IDEA (<https://github.com/eaghayifind-unique-usage>)

**Excavator**, a Java base parser of Firebase files (<https://github.com/eaghayifexcavator>)

**Plotter**, a data visualizer implemented by Python (<https://github.com/eaghayifplotter>)

**Voting**, a web app with Spring Security, Spring MVC, Firestore (<https://github.com/eaghayifvoting>)

**Polling**, A polls web app with Django framework (<https://github.com/eaghayifpolling>)

**BioPay**, BioPay is a prepayment system through Bio-metric fingerprint and Face recognition developed by C# and Android.

**Virtual-World Mobile Solution**, a mobile app which has services such as mobile payment, mobile retail, mobile platforms. It works on iPhone, iPads and Android tablets and Android devices.

**Dandelion**, a J2EE multi-tier application which uses technologies such as Spring, Hibernate, Soap web services in order to provide a tool to inform people and departments about any event via SMS, email and Soap web services.

**Top-up**, it proposed to achieve mobile operators services via mobile and The Internet. developed by Spring and hibernate, Oracle Database.

**CorpoMate**, a J2EE multi-tier application which on data layer uses Hibernate and Soap web service client to access to the core banking data base and services

## TECHNICAL STRENGTHS

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**Back-end:** *Advanced Knowledge of JavaSE, JavaEE, Microservices, JPA, JTA, JMS, Servlet, Swing, Java Media Framework, Spring (Spring Core, Spring MVC, Spring Boot, Spring Security, Spring Data), and Hibernate; Experience with Node.js, Express, Python and C#.*

**Front end:** *JSF, JSP, JavaScript, HTML, CSS, UX, User Experience Testing.*

**Mobile development:** *Android, Swift.*

**Cloud:** *Google Cloud Functions, AWS, Heroku Platform.*

**Containers:** *Apache tomcat, JBoss EAP, Oracle WebLogic, Wildfly, Jetty.*

**Web-Service:** *REST (JAX-RS, Jersey), SOAP (JAX-WS, WSDL, Axis2), Spring WS.*

**Database:** *Microsoft SQL, Oracle, PostgreSQL, MySQL, Firebase, Cassandra, Redis.*

**Test:** *Defect and Bug Discovery, Junit, Combinatorial test, Mutation testing (PIT).*

**CI/CD:** *Jenkins, TeamCity.*

**Analyzing and Monitoring:** *SonarQube, SoapUI, JProfiler, Apache JMeter.*