

# ERFAN HOSSEINI SERESHGI

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## SUMMARY

Highly motivated and results-oriented software developer with a deep passion for research-intensive software engineering and data analysis in navigation, routing, road maps and GIS. Demonstrated ability to conduct impactful research, develop innovative algorithms, and implement efficient software solutions in C++, Java and Python. Strong publication record in leading computer science venues and extensive experience in teaching and mentoring. Specialized in shape/graph comparison methods and spatial data analysis.

## PROFESSIONAL EXPERIENCE

### **Graduate Research Assistant, Tulane University**

2021-present

New Orleans, LA

- Published 5+ papers in top venues such as SoCG, WADS and ACM SIGSPATIAL
- Received Summer Graduate Award from Connolly Alexander Institute for Data Science (Data Hub) in 2023
- Received Best paper award from ACM SIGSPATIAL International Workshop on Spatial Gems in 2021
- Developed and implemented over 3,000 lines of code for four organizational projects and co-mentored 5 undergraduate researchers.

### **Data Scientist, LA-CEAL NIH Project**

Jan 2021-Nov 2021

New Orleans, LA

- Was part of the group that received \$1 million NIH grant to engage communities hardest hit by COVID-19 among 12 total entities that received such a grant.
- Collected and labeled social media data of more than 25,000 users using the state-of-the-art NLP and machine learning practices.
- Established and documented a framework for collecting and labeling the social media activities for future research.

### **Research Software Engineer, Tulane School of Public Health**

Jan 2021-Nov 2021

New Orleans, LA

- Implemented and maintained a python program to manage and classify collected GPS data from 100+ patients based on census data, crime reports, private datasets and public maps.

**IT Specialist, Tulane Pre-college Program**

Summer 2020

New Orleans, LA

- Ensured high availability and uptime for the program's online platform, with a target of 99.9% uptime, with less than 10 minutes to acknowledge and less than 30 minutes to resolve issues.
- Helped generate revenue by enabling online courses and programs in the beginning of the 2020 pandemic, which estimated to be \$100k.
- Developed and maintained a database of frequently asked questions and troubleshooting tips for program staff and students, making it easier for them to resolve common issues on their own.

**Jr. Product Manager, AIESEC in Iran**

2017 – 2018

Tehran, Iran

- Led a team of 3 developers in the creation of a customer support chatbot that offered 24/7 assistance and resolved up to 75% of submitted issues within 24 hours.

**Front-end Developer Intern, Moduland.ir**

Summer 2017

Tehran, Iran

- Designed and developed a responsive and modern website under Google's Material Design guidelines which increased the company's exposure to the clients roughly 60%

**EDUCATION****Tulane University – New Orleans – Ph.D.**

2018 – 2025

- Computer science

**Amirkabir University of Technology – Tehran – Bachelor of Science**

2014 – 2018

- Computer science

**RESEARCH AND PUBLICATIONS****ROADSTER: Improved Algorithms for Subtrajectory Clustering and Map Construction**

2025

(K. Buchin, M. Buchin, J. Gudmundsson, J. Hendriks, E. Hosseini Sereshgi, R. I. Silveira, J. Sleijster, F. Staals, C. Wenk), Computers and Geosciences Journal, Vol. 196, 49 pages, Feb 2025.

**Length-preserving Matching for Closed Curves**

2024

(E. Hosseini Sereshgi, M. Löffler, F. Staals, C. Wenk), 31<sup>st</sup> Fall Workshop on Computational Geometry, 5 pages, 2024.

**Map Stitcher: Graph Sampling-based Map Conflation**

2024

(E. Hosseini Sereshgi, and C. Wenk), 3<sup>rd</sup> ACM SIGSPATIAL International Workshop on Spatial Big Data and AI for Industrial Applications (GeoIndustry), 11 pages, 2024.

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| <b>Graph Sampling for Map Comparison</b><br>(J. Aguilar, K. Buchin, M. Buchin, E. Hosseini Sereshgi, R.I. Silveira, C. Wenk),<br>ACM Transactions on Spatial Algorithms and Systems 10(3), 24 pages, 2024.   | 2024 |
| <b>Drawing Reeb Graphs</b><br>(E. Chambers, B.T. Fasy, E. Hosseini Sereshgi, M. Löffler, S. Percival),<br>31 <sup>st</sup> International Symposium on Graph Drawing and Network<br>Visualization, Poster paper, 2023.  | 2023 |
| <b>On Length-sensitive Fréchet Similarity</b><br>(K. Buchin, B.T. Fasy, E. Hosseini Sereshgi, C. Wenk), 18 <sup>th</sup> Algorithms and<br>Data Structures Symposium (WADS): 208-231, 2023.  | 2023 |
| <b>Merging Roadmaps using Graph Distance Measures</b><br>(E. Hosseini Sereshgi and C. Wenk), 30 <sup>th</sup> Fall Workshop on Computational<br>Geometry, 5 pages, 2022.   | 2022 |
| <b>Graph Sampling for Map Comparison</b> (received best paper award)<br>(J. Aguilar, K. Buchin, M. Buchin, E. Hosseini Sereshgi, R.I. Silveira, C. Wenk),<br>3 <sup>rd</sup> ACM SIGSPATIAL International Workshop on Spatial Gems, 2021.  | 2021 |
| <b>Measuring Length-Preserving Fréchet Correspondence for Graphs in <math>\mathbb{R}^2</math></b><br>(K. Buchin, B. T. Fasy, E. Hosseini Sereshgi and C. Wenk), 29 <sup>th</sup> Fall Workshop<br>on Computational Geometry, 5 pages, 2021.  | 2021 |
| <b>Improved Map Construction using Subtrajectory Clustering</b><br>(K. Buchin, M. Buchin, J. Gudmundsson, J. Hendriks, E. Hosseini Sereshgi,<br>V. Sacristán, R. Silveira, J. Sleijster, F. Staals, C. Wenk), 4 <sup>th</sup> ACM SIGSPATIAL<br>Workshop on Location-Based Recommendations, Geosocial Networks, and<br>Geoadvertising: article 5, 4 pages, 2020. | 2020 |
| <b>Computing Relevant Subtrajectory Bundles Faster</b><br>(E. Hosseini Sereshgi and C. Wenk), SoCG, Computational Geometry:<br>Young Researchers Forum, 2 pages, 2020.   | 2020 |
| <b>Clustering Gene Expression with Polygonal Chain Alignment</b><br>(H. Banaee, E. Hosseini Sereshgi, A. Mohades, F. Zare) - Capstone project  | 2018 |

## PRESENTATIONS

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|---|------|
| <b>Length-preserving Matching for Closed Curves</b><br>31 <sup>st</sup> Fall Workshop on Computational Geometry (FWCG)  | 2024 |
| <b>Map Stitcher: Graph Sampling-based Map Conflation</b><br>3 <sup>rd</sup> ACM SIGSPATIAL International Workshop on Spatial Big Data<br>and AI for Industrial Applications (GeoIndustry) | 2024 |
| <b>On Length-sensitive Fréchet Similarity</b><br>18 <sup>th</sup> Algorithms and Data Structures Symposium (WADS)   | 2023 |
| <b>Merging Roadmaps using Graph Distance Measures</b><br>30 <sup>th</sup> Fall Workshop on Computational Geometry (FWCG)  | 2022 |
| <b>Graph Sampling for Map Comparison</b><br>3 <sup>rd</sup> ACM SIGSPATIAL International Workshop on Spatial Gems   | 2021 |

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| <b>Measuring Length-Preserving Fréchet Correspondence for Graphs in <math>\mathbb{R}^2</math></b><br><i>29<sup>th</sup> Fall Workshop on Computational Geometry (FWCG)</i>         | 2021 |
| <b>The Study of Gentrification on Social Urban Simulation -<br/>How Income and Interest Can Shape Neighborhoods</b><br><i>Tulane University</i>                                    | 2020 |
| <b>Improved Map Construction using Subtrajectory Clustering</b><br><i>4<sup>th</sup> ACM SIGSPATIAL, Location-based Recommendations,<br/>Geosocial Networks and Geoadvertising</i> | 2020 |
| <b>Computing Relevant Subtrajectory Bundles Faster</b><br><i>36<sup>th</sup> International Symposium on Computational Geometry<br/>(SoCG), Young Researchers Forum</i>             | 2020 |
| <b>Clustering Gene Expression with Polygonal Chain Alignment</b><br><i>Amirkabir University of Technology</i>  | 2018 |
| <b>A brief Intro to Computational Geometry</b><br><i>Amirkabir University of Technology, Graduate studies seminar</i>  | 2017 |

## TEACHING EXPERIENCE

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|---|-------------------------------------|
| <b>Algorithms (Graduate level)</b><br><i>Teaching assistant</i>                         | Fall 2024                           |
| <b>Computational Geometry (Graduate level)</b><br><i>Teaching assistant</i>             | Fall 2023                           |
| <b>Arduino course at Tulane Pre-college Program</b><br><i>Instructor</i>                | Summer 2022                         |
| <b>Electrical Engineering course at Tulane Pre-college Program</b><br><i>Instructor</i> | Summer 2022                         |
| <b>Introduction to Discrete Math</b><br><i>Teaching assistant</i>                       | Fall 2020                           |
| <b>Introduction to Algorithms</b><br><i>Teaching assistant</i>                          | Fall 2019                           |
| <b>Python game design at Tulane Pre-college Program</b><br><i>Instructor</i>            | Summer 2019 and 2022                |
| <b>Robotics at Tulane Pre-college Program</b><br><i>Instructor</i>                      | Summer 2019 and 2022                |
| <b>Intro to Computer Science 1 (Python)</b><br><i>Teaching assistant</i>                | Fall 2018, Spring 2019, Spring 2020 |
| <b>Operating systems Lab/Workshop</b><br><i>Teaching assistant</i>                      | Spring 2017                         |
| <b>C++ Programming teacher at Helli 4 high school</b><br><i>Instructor</i>              | 2014 – 2015                         |

## LEADERSHIP & VOLUNTEER EXPERIENCE

- Tulane Computer Science Graduate Student Council (CSGSC) founding member
- Tulane Computer Science Graduate Student Council department representative (Spring 2023)
- Tulane Graduate Studies Student Association Travel fund committee member (2023)
- Senator at Tulane Graduate and Professional Student Association (2020-2022)
- Tulane Graduate Studies Student Association representative (2020-2021)
- IT team leader at AIESEC in University of Tehran (2017-2018)
- Marketing designer at AIESEC in Amirkabir University of Technology (Spring 2017)
- AIESEC global volunteer for raising public awareness about clean energy and recycling in Guangzhou, China. (Summer 2016)
- Member of scientific association of math and computer science at Amirkabir University of Technology (2015-2016)

## CERTIFICATES

- Fundamentals of Deep Learning from Nvidia
- Java programming from Amirkabir University of Technology
- Android development from Amirkabir University of Technology
- Web development and web design from Amirkabir University of Technology
- CITI Group1. Biomedical Researchers
- CITI Group4. IRB, Biomedical Research

## SKILLS & ABILITIES

- Skilled in Python, Java and C++
- Familiar with HTML, CSS, Javascript and SQL
- Have worked with R and R studio
- Familiar with Git and Visual Paradigm
- Have some intermediate knowledge about Android Studio
- Have experience working with Adobe Photoshop and illustrator
- Familiar with QGIS and GDAL libraries
- Familiar with Pytorch and Keras

## LANGUAGES

- English (fluent)
- Persian (native)
- Arabic (intermediate)

## HONORS & AWARDS

- Tulane Connolly Alexander Institute for Data Science Summer Graduate Award (2023) - \$2000 prize
- Best paper award at ACM Sigspatial: Spatial Gems (2021)
- Ranked 6<sup>th</sup> in the Iranian national CS graduate school entrance exam (2018)
- Ranked among top 5 computer science students at Amirkabir University of Technology (class of 2018)
- Semi-finalist in 2014 BAYAN coding contest in Iran
- Ranked among 3% in the Iranian national university/college entrance exam (2014) (More than 60,000 students)
- Was selected by and studied at the national organization for development of exceptional talents (NODET) in Iran