Hamza Elhamdadi

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Objective Statement: I am a data visualization researcher who focuses on fostering trust and understanding the causes and mechanisms of trust in visualization-based decision-making.

Research Areas: Data Visualization, Visual Analytics, Trust Measurement, Human-Computer Interaction, UI/UX Design, Fluent Data Visualizations, Cognitive Science

Education

Ph.D. in Computer Science, *University of Massachusetts Amherst* 2021-2025

Advisor: Cindy Xiong, *GPA:* 3.51

M.S. in Computer Science, *University of South Florida* 2020-2021

Advisor: Paul Rosen, *GPA:* 3.66

B.S. in Computer Science, Minor in Mathematics, *University of South Florida* 2016-2020

Advisor: Paul Rosen

Work Experience

Data Visualization Researcher, University of Massachusetts Amherst 2021-Present

- Investigates human trust formation and causes of distrust in data visualizations. Proposes comprehensive framework for measuring human trust in visual data communication
- Designs interactive surveys and survey stimuli using Javascript, D3.js, Python, pandas, numpy, scikit-learn, scipy, and matplotlib
- Uses Qualtrics and Prolific to run human-subjects studies, and analyzes the data using R, tidyverse, ggplot2 and lme4

Topological Data Analysis Researcher, University of South Florida 2019-2021

- Explored and contributed new methods for Explainable AI in Affective Computing using Topological Data Analysis
- Used Python, Flask, scikit-learn, Javascript, JQuery, and D3.js to implement a pipeline for computing the similarity of time-series persistent homology

IT Service Technician, University of South Florida 2018-2020

- Provided technical support to students, staff and faculty via chat, email, phone, and in person
- Utilized the ServiceNow and Jira incident tracking systems to manage and document user requests
- Troubleshooted and resolved end-user application, operating system, and network-access issues

Refereed Publications

Vistrust: a Multidimensional Framework and Empirical Study of Trust in Data Visualizations
Elhamdadi, H., Stefkovics, A., Beyer, J., Moerth, E., Bearfield, C. X., Nobre, C.
IEEE Transactions on Visualization and Computer Graphics, 2023. *Acceptance Rate:* 25%

AffectiveTDA: Using Topological Data Analysis To Improve Analysis And Explainability In Affective Computing. Elhamdadi, H., Canavan, S., Rosen, P.
IEEE Transactions on Visualization and Computer Graphics, 2021. *Acceptance Rate:* 25%

Recognizing Emotion in the Wild using Multimodal Data.
Srivastava, S., Lakshminarayan, S., Hinduja, S., Jannat, S.R., Elhamdadi, H., Canavan, S.
International Conference on Multimodal Interaction (ICMI), 2020. *Acceptance Rate:* 41%

Workshop Papers

How Do We Measure Trust in Visual Data Communication? Elhamdadi, H., Gaba, A., Kim, Y., Xiong, C. *IEEE VIS Beliv Workshop, 2022.*

Using Processing Fluency as a Metric of Trust in Scatterplot Visualizations. Elhamdadi, H., Padilla, L., Xiong, C. *IEEE VIS TREX Workshop, 2021.*

Refereed Poster Presentations

Processing fluency improves trust in scatterplot visualizations Elhamdadi, H., Padilla, L., & Xiong, C. *IEEE VIS Posters, 2022.*

Conference Presentations

Oct 2023 **VisTrust: a Multidimensional Framework and Empirical Study of Trust in Data Visualizations**,
IEEE VIS 2023, Melbourne, Australia

Oct 2022 **How Do We Measure Trust in Visual Data Communication?**,
IEEE VIS 2022, Oklahoma City, OK

Oct 2022 **Using Processing Fluency as a Metric of Trust in Scatterplot Visualizations**,
IEEE VIS 2022, Oklahoma City, OK

Oct 2021 **AffectiveTDA: Using Topological Data Analysis To Improve Analysis And Explainability In Affective Computing.**
IEEE VIS 2021, New Orleans, LA

Teaching and Service

Volunteer **Student Volunteering:** IEEE VIS 2023, IEEE VIS 2021

Teaching **COMPSCI 220: Programming Methodologies**, *University of Massachusetts Amherst*
Graduate Teaching Assistant for Prof. Marius Minea and Prof. Jaime Dávila

Mentoring Experience

2021-2022 **Bhoomika Raj Ethakota** ESRP CS Student, *University of Massachusetts Amherst*
Supervised for Early Scholars Research Program Project - "Data Dashboards and Trust"

2021-2022 **Erin Melia** ESRP CS Student, *University of Massachusetts Amherst*
Supervised for Early Scholars Research Program Project - "Data Dashboards and Trust"

2021-2022 **Jocelyn Velazquez** ESRP CS Student, *University of Massachusetts Amherst*
Supervised for Early Scholars Research Program Project - "Data Dashboards and Trust"

2021-2022 **Lily Thai Edmonds** ESRP CS Student, *University of Massachusetts Amherst*
Supervised for Early Scholars Research Program Project - "Data Dashboards and Trust"

Skills

Front-End	ReactJs, TypeScript, Javascript, JQuery, Boostrap, HTML, CSS
Back-End	Flask (Python), Heroku, Docker, Github, Gitlab
Database	MySQL, PostgreSQL
Machine Learning / Statistics	PyTorch, Scipy, JAX, Tensorflow, Keras, R, lme4
Data Visualization	D3.js, Tableau, tidyverse, ggplot2
Miscellanous	Java, Hadoop, Scala, C/C++, LaTex