

Tabassum Kakar (CV)

Worcester, MA

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Portfolio: <https://tkakar.github.io/Website/>
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Summary

- Self-motivated data visualization enthusiast with > 5 years' experience in designing user-centered visual analytics by conducting user research for gathering requirements, storyboarding, and iteratively designing and evaluating interactive web-based visualizations and analytics for the FDA.
- Led multiple Pharmacovigilance projects with the FDA that included ideation and design of interactive visualizations to help analysts gain actionable insights to make informed decisions about drug related adverse reactions and medication errors to improve public health safety.
- Strong leadership, communication, and teamwork skills established by managing multiple projects across research and development teams, as well as industry stakeholders leading to multiple collaborations with more than 10 peer reviewed scientific publications.
- Remarkable time management and mentoring skills with a unique combination of detail-oriented mindset, problem-solving skills, and proven ability to meet deadlines resulting in securing more than \$200,000 in scholarships.

Work Experience

Research/Teaching Assistant

Sep 2015 – Present

Worcester Polytechnic Institute

- Identified business needs using a user-centered design approach for iteratively designing visualizations and analytics to make complex semi-structured data accessible & interpretable.
- Performed extensive literature review and designed visual analytics following the best design practices and principals from human-computer interaction and data visualization.
- Led the complete lifecycle of analytics projects from requirement gathering to designing mockups and storyboards to the final development and evaluation of the interactive prototypes.
- Bridged the gap between domain experts with medical background from the FDA, programmers to develop analytics systems, and researchers for designing innovative visual analytics.

Oak Ridge Institute of Science & Education (ORISE) Research Fellow

Sep 2016 – Mar 2019

U.S. Food and Drug Administration

- Elicited requirements and derived use-cases to improve drug safety review process by understanding users' needs and workflow challenges via interviews and contextual inquiry.
- Designed and evaluated user-driven analytics including interactive visual overviews and summaries to help users make informed decisions about medication errors and adverse reactions.
- Trained naïve users in visual analytics and communicated insights to technical and non-technical staff including researchers, medical professionals, and executives in an effective manner.

Database Administrator

Oct 2013 – Jul 2014

Microfinance Investment Support Facility (MISFA), Afghanistan

- Evaluated the design and functionality of the existing client management system via pilot testing.
- Synthesized user feedback gathered via usability studies and interviews, into actionable insights.
- Refined the application design to meet user needs resulting in cost reduction by \$90,000.

Business Intelligence Developer

Jul 2012 – Sep 2013

Mobile Telecommunication Network (MTN), Kabul Afghanistan

- Translated business needs into technical specifications for designing BI-reports.
- Developed SQL queries to generate BI reports with information to drive business decisions.
- Designed dashboard visualizations to monitor KPIs such as subscribers and revenue growth.

Assistant Software Developer

Jun 2011 – Jul 2012

Kardan University, Kabul Afghanistan

- Elicited user requirements and derived use-cases for the Finance and HR departments.
- Developed desktop applications for student record management using VB.Net and MySQL.
- Designed reports for cash flow analysis and management for the finance department.

ADDITIONAL EXPERIENCE:

- Graduate Student Assistant at Data Science Program, WPI, USA. May - Aug, 2016
- Teaching Assistant at Frontier & Launch program, WPI, USA. Jul - Aug, 2015
- Part Time Lecturer at Kardan University, Afghanistan. Sep 2011 - May 2012
- Database Developer Intern at GS Constructions, Afghanistan. May - Aug, 2010

Education

PhD | Data Science | GPA 4.0/4.0 | Worcester Polytechnic Institute (WPI), USA. May 2016 – Present

MS | Data Science | GPA 4.0/4.0 | Worcester Polytechnic Institute (WPI), USA. Aug 2014 – May 2016

BS | Software Engineering | GPA 3.4/4.0 | GIKI, Pakistan. Aug 2007 – Jun 2011

Publications:

- **[CVICG'20]** *Designing a Visual Analytics System for Medication Error Screening and Detection.* **Tabassum Kakar**, et al. International Joint Conference on Computer Vision, Imaging and Computer Graphics. Springer, Cham, 2019.

- **[EuroVis'19]** *DIVA: Exploration and Validation of Hypothesized Drug-Drug Interactions*. **Tabassum Kakar**, Xiao Qin, Elke Rundensteiner, Lane Harrison, Sanjay Sahoo and Suranjan De.
- **[IVAPP'19]** *MEV: Visual Analytics for Medication Error Detection*. **Tabassum Kakar**, Xiao Qin, Cory Tapply, Derek Murphy, Daniel Yun, Oliver Spring, Elke A. Rundensteiner, Lane Harrison, Thang La, Sanjay K. Sahoo and Suranjan De.
- **[Drug Safety'19]** *Adverse Drug Event Detection from Electronic Health Records Using Hierarchical Recurrent Neural Networks with Dual-Level Embeddings*. Susmitha Wunnava, Xiao Qin, **Tabassum Kakar**, Cansu Sen, Elke A. Rundensteiner and Xiangnan Kong.
- **[URTC'18]** *Drug-Drug Interaction Signal Detection from Drug Safety Reports*. Brian Zylich, Brian McCarthy, Andrew Schade, Huy Quoc Tran, Xiao Qin, **Tabassum Kakar** and Elke A. Rundensteiner.
- **[CIKM'18 Demo]** *DEVES: Interactive Signal Analytics for Drug Safety*. **Tabassum Kakar**, Xiao Qin, Susmitha Wunnava, Brian McCarthy, Andrew Schade, Huy Quoc Tran, Brian Zylich, Elke A. Rundensteiner, Lane Harrison, Sanjay K. Sahoo and Suranjan De.
- **[AMIA'18 Poster]** *Deep Learning Strategies for the Automatic Detection of Medication and Adverse Drug Events from Electronic Health Records*. Susmitha Wunnava, Xiao Qin, **Tabassum Kakar**, Elke A. Rundensteiner and Xiangnan Kong.
- **[MADE'18 Workshop]** *Bidirectional LSTM-CRF for Adverse Drug Event Tagging in Electronic Health Records*. Susmitha Wunnava, Xiao Qin, **Tabassum Kakar**, Elke A. Rundensteiner and Xiangnan Kong.
- **[ICDE'18 Demo]** *Multi-Drug Adverse Reactions Analytics*. Xiao Qin, **Tabassum Kakar**, Susmitha Wunnava, Brian McCarthy, Andrew Schade, Huy Quoc Tran, Brian Zylich, Elke A. Rundensteiner, Lane Harrison, Sanjay K. Sahoo and Suranjan De.
- **[HEALTHINF'18]** *One Size Does Not Fit All: An Ensemble Approach Towards Information Extraction from Adverse Drug Event Narratives*. Susmitha Wunnava, Xiao Qin, **Tabassum Kakar**, Xiangnan Kong, Elke Rundensteiner, Sanjay Sahoo and Suranjan De.
- **[BIOSTEC'18]** *Multi-layered Learning for Information Extraction from Adverse Drug Event Narratives*. Susmitha Wunnava, Xiao Qin, **Tabassum Kakar**, M. L. Tlachac, Xiangnan Kong, Elke A. Rundensteiner, Sanjay K. Sahoo, and Suranjan De.
- **[KDD'17]** *MARAS: Signaling Multi-Drug Adverse Reactions*. Xiao Qin, **Tabassum Kakar**, Susmitha Wunnava, Elke Rundensteiner and Lei Cao.
- **[SAC'17]** *Towards Transforming FDA Adverse Event Narratives into Actionable Structured Data for Improved Pharmacovigilance*. Susmitha Wunnava, Xiao Qin, **Tabassum Kakar**, Vimig Socrates, Amber Wallace and Elke Rundensteiner.

Conference Talks/Posters

- *MedViz: Visual Analytics for Medication Error Detection*. International Conference on Information Visualization and Applications (IVAPP). Prague, Czech Republic. Feb 2019.
- *ConText: Supporting the Pursuit and Management of Evidence in Text-based Reporting Systems*. Graduate Research Innovation Exchange (GRIE). WPI, Worcester, MA. Feb 6, 2019.

- *ConText: Supporting the Pursuit and Management of Evidence in Text-based Reporting Systems*. New England Database Summit (NEDB). MIT, Cambridge, MA. Jan24, 2019.
- *DEVES: Interactive Signal Analytics for Drug Safety*. Conference on Information and Knowledge Management (CIKM). France, Paris. Apr 2018.
- *DIVA: Towards Validation of Hypothesized Drug-Drug Interactions via Visual Analysis*. New England Database Summit (NEDB). MIT, Cambridge, MA. Jan 19, 2018.
- *DIVA: Towards Validation of Hypothesized Drug-Drug Interactions via Visual Analysis*. Graduate Research Innovation Exchange (GRIE). WPI, Worcester, MA. Apr 11, 2017.
- *Towards Pharmacovigilance using Machine Learning to Identify Unknown Adverse Reactions Triggered by Drug-Drug Interaction*. UMCCTS Community Engagement and Research Symposium. UMass Medical School, Worcester, MA. March 25, 2016.

Awards and Achievements

- Women's Impact Network Young Investigator fellowship, WPI, USA. 2020-2021
- Oak Ridge Institute for Science and Education (ORISE) fellowship, USA. 2016 – 2019
- WPI Travel Award to present research work at conferences. 2018, 2019
- WPI Data Science Citizen Award. May 2017
- 3rd place in WPI GRIE Poster Competition. Apr 2017
- WPI Data Science Community Leadership Award. May 2016
- Fulbright scholarship for fully funded MS at WPI, USA. 2014 - 2016
- Grace Hopper Conference (GHC) travel scholarship. 2015, 2016
- Lucky Cement scholarship for fully funded BS at GIKI, Pakistan. 2007 - 2011
- Gold medalist. Ranked (1/35) in Software Engineering Program, GIKI, Pakistan. Jun 2011

Activities

- Executive member of WPI Data Science Council. 2015 - 2020
- Reviewer at VLDB, Applied Clinical informatics, and AMIA. 2018, 2020, 2020
- Executive member of WPI Muslim Student Association (MSA). Sep - Dec, 2015
- Volunteer at Boston Data Festival, Microsoft NERD Boston. Sep 18 - 23, 2015
- Volunteer at Touch Tomorrow Event, WPI. Jun 2015

Technical Skills

Data Visualization

D3.js

React

Tableau

Databases

SQL

MySQL, NoSQL

Programming

Python

R

JavaScript

CSS

HTML

C/C++

Tools

Weka

IBM Modeler

XLMiner

MongoDB

Pig

Latex

Other Skills

Business Need Analysis

Storyboarding/Storytelling

Data Visualization

Training and Mentoring

Data Manipulation

Machine Learning

Interests: Hiking, Baking, and Music

Publications (11): <https://scholar.google.com/citations?user=yDwzxBcAAAAJ>

References: Available upon request