Mai Dahshan

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EDUCATION

Ph.D. Computer Science May 2021

Virginia Tech, Blacksburg, VA

Advisor: Dr. Nicholas Polys and Dr. Chris North
Dissertation: Visual Analysis of High-Dimensional Simulation Ensembles

M.S. in Computer Science Dec. 2013

American University in Cairo, Egypt

Advisor: Dr. Sherif El-Kassas
Dissertation: Data Security in Cloud Storage Services

B.S. in Computer Science May 2008

Suez Canal University, Ismailia, Egypt

TEACHING INTERESTS

- Data Science
- Computer Systems
- Usability Engineering
- Web Development
- Data Structures and Algorithms
- Information and Scientific Visualization
- Object Oriented Programming

RESEARCH INTERESTS

- Data Science
- Machine Learning
- Computer Education
- High-Performance Computing
- Human Computer Interaction
- Information and Scientific Visualization

PROFESSIONAL EXPERIENCE

Assistant Professor August 2024 - Present

School of Data Science, University of Virginia

Assistant Professor August 2021 - May 2024

School of Computing, University of North Florida

- Developing and engaging in scholarly activities .
- Advising undergraduate and graduate students.
- Providing service to the institution and community.
- Teaching courses at undergraduate and graduate levels.
- Developing curriculum, and other instructionally-related duties.

Research Scientist June 2021 - August 2021

Advanced Research Computing (ARC), Virginia Tech

- Developing python scripts to visualize mining data on Paraview.
- Designing and developing a frontend visualization for interacting with mining data.
- Provide visualization, machine learning, and parallel computing consulting services to faculty

Doctoral Research August 2016 – May 2021
InfoVis and Visionarium Labs, Virginia Tech

- Developed a visual analytics tool for exploring text data
- Designed and developed a new visual analytics tool to explore high dimensional simulation ensemble parameters and ensemble spaces simultaneously
- Designed and developed a new visual analytics tool for exploring and analyzing big spatial simulation ensembles
- Developed a parallelized Gaussian Process Regression (GPR) model
- Developed synthetic data generator software for user study to evaluate the effectiveness of the visual analytics tool

Graduate Research Assistant Summer 2017 – May 2021
Advanced Research Computing (ARC), Virginia Tech

- Benchmark and evaluate compute and storage resources
- Troubleshoot users problems when using ARC supercomputers
- Teach a one-day workshop to promote the use of visualization and parallel computing.

Summer Intern with Data Science at the Scale Group May - August 2019
Los Alamos National Laboratory

- Developed a framework for visual analysis of high dimensional image based simulation ensembles

TEACHING EXPERIENCE

Instructor

CIS4930: Introduction to Python Programming (University of North Florida, USA) *Spring 2024*
COP3855: Web Systems Development(University of North Florida, USA) *Fall 2023*
COP6284: Programming for Data Science (graduate) (University of North Florida, USA) *Fall 2022*
COP3503: Programming II (University of North Florida, USA) *Fall 2021*
COP4813: Internet Programming (University of North Florida, USA) *Spring 2022, Fall 2022, Spring 2023,Fall 2023*
CAP4784: Introduction to Data Analytics (University of North Florida, USA) *Spring 2022, Spring 2023, Spring 2024*
CS1064: Introduction to Programming in Python (Virgina Tech) *Summer 2020*

Graduate Teaching Assistant

Computer Systems (Virginia Tech, USA) *Fall 2015 - Spring 2017*
Information and Distributed System Security (American University in Cairo, Egypt) *Fall 2014*
Computer Architecture (American University in Cairo, Egypt) *Spring 2013, Fall 2013*
Object-Oriented Programming (American University in Cairo, Egypt) *Fall 2012*
Fundamentals to Computer Science (American University in Cairo, Egypt) *Fall 2011 - Spring 2012*
Introduction to Programming (Suez Canal University, Egypt) *Spring 2011*
Data structures and Algorithms (Suez Canal University, Egypt) *Spring 2010, Fall 2010*

- Substitute instructor
- C/C++/Java, led lab sessions twice per week
- Graded quizzes, assignments, and programming projects
- Advised undergraduate and graduate computer science students during office hours
- Provided guidance to undergraduate and graduate students researching term papers

Assistant Lecturer

Operating Systems (Suez Canal University, Egypt) *Spring 2014 - Spring 2015*

- Substitute instructor
- Advised undergraduate computer science students during office hours.

PUBLICATIONS

Dahshan, M. and Galanti, T., 2024. Teachers in the Loop: Integrating Computational Thinking and Mathematics to Build Early Place Value Understanding. Education Sciences, 14(2), p.201.

Dahshan, M., Polys, N., House, L., North, C., Pollyea, R.M., Turton, T.L. and Rogers, D.H., 2024. Human–machine partnerships at the exascale: exploring simulation ensembles through image databases. Journal of Visualization, pp.1-19.

Dahshan, M., Polys, N.F., House, L., Youssef, K. and Pollyea, R.M., 2024. Human-Machine Collaboration for the Visual Exploration and Analysis of High-Dimensional Spatial Simulation Ensembles. In VISIGRAPP (1): GRAPP, HUCAPP, IVAPP (pp. 678-689).

Mohamed, M.F., **Dahshan, M.**, Li, K. and Salah, A., 2023. Virtual Machine Replica Placement Using a Multiobjective Genetic Algorithm. International Journal of Intelligent Systems, 2023(1), p.8378850.

Dahshan, M. and Galanti, T.,2022. Designing Integrated Math+ CT Activities to Promote Sensemaking about Place Value in Grades K-2. In Proceedings of the 54th ACM Technical Symposium on Computer Science Education V.2 (pp. 1321-1321).

Dahshan, M., Turton, T.L. and Polys, N., 2022. Exploration and Analysis of Image-base Simulation Ensembles. In EuroVis (pp. 91-93).

Dahshan, M., House, L. ,Polys, N., 2020. High-dimensional spatial simulation ensemble analysis. In Proceedings of the 9th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data (pp. 1-4).

Dahshan, M., Polys, N., Jayne, R., and Pollyea, R. 2020. Making sense of scientific simulation ensembles with semantic interaction. In Computer Graphics Forum (Vol. 39, No. 6, pp. 325-343).

Panwar, P., pang, Y., Zhang, D., **Dahshan, M.**, Debardeleben, N., Ravindran, B. and Jian, X., 2019. Quantifying memory underutilization in hpc systems and using it to improve performance via architecture support. In Proceedings of the 52nd Annual IEEE/ACM International Symposium on Microarchitecture (pp. 821-835).

Dahshan, M. and Poly, N., 2018. Making Sense of Scientific Simulation Ensembles. In SC18: The International Conference for High-Performance Computing, Networking, Storage and Analysis.

Dahshan, M. and Elkassass, S., 2014. Framework for securing data in cloud storage services. In 2014 11th International Conference on Security and Cryptography (SECRYPT) (pp. 1-8). IEEE.

Dahshan, M. and Elkassass, S., (2014, May). Data Security in Cloud Storage Services. In The Fifth International Conference on Cloud Computing (pp. 1-5).

MENTORING

Ahmed Sayed, MS Student, School of Computing, University of North Florida	Spring 2023- Spring 2024
Ram Venkatapuram, Undergraduate Student (Independent Study), University of North Florida	Summer 2023
Kelvin Vargas, Undergraduate Student (Independent Study), University of North Florida	Fall 2022
Robert Rutter, Undergraduate Student (Independent Study), School of Computing, University of North Florida	Fall 2022
Bharani Kothareddy, MS. Student (Independent Study), School of Computing, University of North Florida	Spring 2022
JooYoung Whang, MS. in Computer Science, Virginia Tech	Fall 2019 - Spring 2020
Kalyani Gadgil, MS. in Computer Science, Virginia Tech	Fall 2018

Grants

(Co-PI) Center for Advanced Subsurface Earth Resource Models (CASERM) UNF Share: $40,000
Visual Data Analytics in 3D and Image Spaces (Award: $200,000) *2022 -2024*

(Co-PI) Center for Advanced Subsurface Earth Resource Models (CASERM) UNF Share: $20,000
Integrating Sequential Simulation with Visual Ensemble Analytics for Mining Applications (Award: $65,000) *2021 - 2022*

(PI) UNF Foundation Board Initiatives Total: $20,000
Integrating Computational Thinking in Mathematics Education in PK-3 *2022-2023*

(PI) First-year Osprey Connections Experience Total: $4,000
Computational Thinking in General Education Curriculum *2022*

PROFESSIONAL SERVICES

Reviewer:

- SIGCSE(Paper - Experience Reports and Tools) (2023)
- BigSpatial (2022 and 2023)
- SIGCSE - Birds of a Feather (2023)

Reviewer:

- CHI'23
- PacificVIS'23
- SIGCSE'23 '24
- IUI'23
- HRI '23
- TEI'23
- HAI '22
- ozCHI'20
- VT GSA Research Symposium'18 '19

Graduate recruiting weeks at Virginia Tech, poster presentation and lab tours Spring 2016, Spring 2018
Student Volunteer during Virginia Tech Career Fair Spring 2018 - Fall 2019

PROFESSIONAL DEVELOPMENT

Faculty Development Training : Distance Learning Course Development (DCD) Spring 2024
Faculty Development Training : Teaching Online Foundation Spring 2022
Future Professoriate Certificate Fall 2019
Human-Computer Interaction (HCI) Certificate Spring 2018
9-Month Diploma in Unix Platform, Information Technology Institute, Cairo, Egypt 2008 - 2009

ACADEMIC HONORS AND AWARDS

Recognition Award - 14th Scholars Transforming Academic Research Symposium (STARS) - UNF 2023
UNF Deserving Faculty Award - Graduating Senior Survey Spring 2023
NSF grant to attend and present at JLab A.I. for Nuclear Physics workshop 2020
NSF Scholarship to attend Tapia Conference 2019
Travel grant from VT CS Dept. and ARC to attend and present at SuperComputing Conference 2018
Scholarship from the VT CS Dept. to attend Grace Hopper Conference 2018
Computer Science Fellowship, Virginia Tech 2015 - 2017
CRA-W Scholarship to attend Grad Cohort Workshop, Virginia Tech 2016
University Fellowship, American University in Cairo 2011 - 2013
School of Sciences and Engineering Honors, American University of Cairo 2012

INVITED TALKS AND PRESENTATIONS

Integrating mathematics and computational thinking activities into early education (K-2) May 2023

- Invited Talk, Culturally Relevant Integration of CS and Mathematics Symposium)

Human-Machine Partnerships: Visual Analysis of High Dimensional Ensembles Fall 2021

- Guest Lecture , Research Methods in Computing(Graduate Class)

Visualization for Femtography Sept. 2020

- Invited Talk, Data Science Roadmap to Comptopn from Factors of Quarks and Gluons Workshop

Visual Analysis of Image-Based Simulation Ensembles 2020

- Poster Presentation, Grace Hopper Conference

Interactive Visual Analysis for Scientific Data March 2020

- Invited Talk, JLab A.I. for Nuclear Physics Workshop

Visual Analysis of Simulation Ensembles Spring 2019

- Presentation, Virginia Tech Graduate Student Assembly (GSA) Research Symposium

High Dimensional Data Visualization Spring 2019

- Guest Lecture , Information Visualization (Graduate Class)

MEMBERSHIPS

Member, UNF's Peer-Review of Teaching Community of Practice Spring 2023- present

Member, National Center for Women and Information Technology (NCWIT) Fall 2021- present

Member, UNF's Diversity and Inclusion committee Fall 2021- present

Member, UNF's Faculty search committee Fall 2021 - Spring 2022

Member, Virginia Tech Graduate Academy for Teaching Excellence (VTGrATE) Fall 2020 - Present

Member, Women in High-Performance Computing (WHPC) Fall 2018 - Present

Member, Society for Industrial and Applied Mathematics Fall 2018 - Present