

# Fadel M. Megahed, PhD

✉ [fmegahed@miamioh.edu](mailto:fmegahed@miamioh.edu)

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## Impact Summary

📖 **Externally Funded Research:** ~ \$1.21M with my share ~ \$630K. Sponsors include: National Institute of Occupational Safety & Health, American Society for Safety Professionals Foundation, National Science Foundation, Aflac, GE Research, and Gore.

📖 **Publications:** 54 peer-reviewed journal papers, 3 invited editorials, and 12 conference proceedings

📖 **Total Citations:** 2,742; h-index: 26, and i10-index: 43

📖 **Press Coverage:** Research findings have been covered by over 50 media outlets including: [Arizona Republic Online](#), [Bloomberg](#), [Industry Week](#), [SupplyChainDive](#) and [Yahoo Finance](#).

📖 **PhD Advisor:** for 8 PhD recipients (all from Auburn University).

## Education

Degree	Date	Institution	Location
PhD Industrial & Systems Engineering	2012	Virginia Tech	Blacksburg, VA
M.S. Industrial & Systems Engineering	2009	Virginia Tech	Blacksburg, VA
B.S. Mechanical Engineering	2008	The American University in Cairo	Cairo, Egypt

## Honors and Awards


- **Miami University:** *Endres Associate Professor Fellow*, 2022–2025.
- **Miami University:** *FSB Research Fellow*, 2023–2025.
- **Miami University:** *University-Wide Outstanding Professor Award Nominee*, 2023–2023.
- **Miami University:** *University Faculty Scholar*, 2023–2023.
- **Miami University:** *ASG/Provost's Student Recognition of Teaching Excellence Award*, 2020–2020.
- **Miami University:** *Neil R. Anderson Endowed Assistant Professor*, 2019–2020.
- **Miami University:** *University-Wide Outstanding Professor Award Nominee*, 2018–2018.
- **NIOSH Deep South Center for Occupational Health and Safety:** *CAREER Award*, 2012–2012.
- **Institute of Industrial Engineers::** *Finalist, Gilbreth Memorial Fellowship*, 2011–2011.
- **Virginia Tech:** *Co-Recipient of the Industrial and Systems Engineering Outstanding GTA Award*, 2010–2010.
- **Virginia Tech:** *Finalist of the Paul E. Torgersen Award for Excellence in Graduate Student Research* ["Third Best Master's Research in the College of Engineering for the academic year 2009/2010"], 2010–2010.
- **The American University in Cairo:** *Summa Cum Laude and graduated highest ranked GPA in the "Mechanical Engineering Spring 2008 Graduating Class"*, 2008–2008.


## Academic Experience


### Miami University

@ Department of Information Systems and Analytics  Oxford, OH


 FSB Faculty Research Fellow


 Jul 2023–Jul 2025


 Endres Associate Professor Fellow


 July 2022–current


 Associate Professor

 July 2020–current

 Neil R. Anderson Assistant Professor

 July 2019–Jun 2020


 Assistant Professor

 Aug 2016–Jun 2020


- Ongoing research in applied machine learning, data visualization, physical fatigue modeling, statistical surveillance, stock market prediction, transportation analytics.
- Redesigned the *Quantitative Analysis of Business Problems* course, developed the *Data-Driven Security* course and assisted with the successful proposal for our MSBA program. Furthermore, I have made significant updates to the *Business Intelligence and Data Visualization* course, where I introduced modules on *data quality/validation*, *use of data mining for data exploration*, and *use of multiple platforms for dashboard development*.

#### • Courses Taught:


– ISA 203: Supplementary Business Statistics

 Last taught: S2018


– ISA 321: Quantitative Analysis of Business Problems

 Last taught: F2018


– ISA 401/501: Business Intelligence & Data Visualization  
Course Materials: Publicly available at [ISA 401 GitHub Repo](#)

 Last taught: F2022

– ISA 419: Data-Driven Security

 Last taught: F2022

– ISA 444: Business Forecasting


 Last taught: S2022

Course Materials: Publicly available at [ISA 444 GitHub Repo](#)


- **Dissertation Committees:** Kelly Ayres (Biostatistics, Expected Ph.D. 2024, Saint Louis University), Federica Garghetti (external reviewer: Mechanical Engineering, Ph.D. 2023, Politecnico di Milano), Longwen Zhao (Biostatistics, Ph.D. 2022, Saint Louis University), Sahand Hajifar (Industrial, Ph.D. 2022, University at Buffalo), Saeb Ragani Lamooki (outside reader: Mechanical and Aerospace Engineering, Ph.D. 2022, University at Buffalo), Eileen Rintsch (Geography, M.S. 2021), Miao Cai (Biostatistics, Ph.D. 2020, Saint Louis University), Amir Baghdadi (outside reader: Mechanical and Aerospace Engineering, Ph.D. 2019, University at Buffalo).

#### • Service:


– VP for Research and Innovation Search Committee: Member

 2021–2022


– Divisional Committee on Societal Impact: Member

 2021–2023


– Dept. Search Committee for Lecturer Position: Chair

 2021–2023


– Divisional Research Committee: Member

 2021–2023


– MU Carbon Offsets Subcommittee: Member

 2020–2023

– Divisional Technology Policies Committee: Member


 2019–2020

– Dept. Search Committee for 5 TT positions: Member


 2017–2020

– Major/Minor Coordination Committee:


\* Chair

 2019–2024


\* Member

 2017–2019

– Center for Analytics and Data Science: Project lead

 2016–2019

– Master of Science in Business Analytics Curriculum: Proposal Developer

 2018–2018

I co-contributed to the initial design of five proposed courses (2018)


– STAR Seminar Series Committee:


 2016–2017


### Auburn University

@ Department of Industrial and Systems Engineering  Auburn, AL



 Affiliate Assistant Professor


 Aug 2016–Aug 2020

 Assistant Professor

 Aug 2012–Aug 2016


- Research in data mining, data visualization, spatio-temporal statistics, statistical surveillance, stock market prediction, transportation analytics.
- **Advisor:** [Lin Lu](#) (Industrial, Ph.D. 2019), [Hamidreza Ahady Dolatsara](#) (Industrial, Ph.D. 2019), [Mohammad Ali Alamdar Yazdi](#) (Industrial, Ph.D. 2018), [Zahra Sedighi Maman](#) (Industrial, Ph.D. 2018), [Bin Weng](#) (Industrial, Ph.D. 2017), [Theyab Alhwiti](#) (Industrial, Ph.D. 2017), [Ali Dag](#) (Industrial, Ph.D. 2016), [Alexander Schnichels](#) (B.S. Thesis at FH Aachen-Germany, 2016), [Yao-Te Tsai](#) (Industrial, Ph.D. 2015).
- Initiated and taught a graduate/undergraduate course on *Data Visualization* (Spring 2014 and Spring 2016).
- Initiated and taught a graduate/undergraduate course on *Big Data Analytics* (Spring 2013).
- **Dissertation Committees:** Amir Mehdizadeh (Industrial, Ph.D. 2022), Qiong Hu (Industrial, Ph.D. 2021), Mohammadnaser Ansari (Industrial, Ph.D. 2020), Ali Aldubiassi (Industrial, Ph.D. 2020), Nasrin Mohabbati Kalejahi (Industrial, Ph.D. 2019), Ebrahim Mortaz (Industrial, Ph.D. 2017), Eren Sakinc (Industrial, Ph.D. 2016), Thomas Sanders (Industrial, Ph.D. 2016), Masood Jabarnejad (Industrial, Ph.D. 2015), Heather Avery (Computer Science, Ph.D. 2015), Zhou Hai (Industrial, Ph.D. 2014), Adam Paul (Computer Science, M.S. 2014), Melody Denhere (reader: Statistics, Ph.D. 2013), Dilcu Helvaci (Industrial, Ph.D. 2013).

 **Virginia Tech**      @ Grado Department of Industrial and Systems Engineering       Blacksburg, VA


 Graduate Teaching Assistant

 Jan–May 2012


 Instructor

 Aug–Dec 2011

 Graduate Research Assistant

 Jan 2010–Aug 2011

 Graduate Teaching Assistant

 Aug 2009–Dec 2010

- Research in quality control methodologies for massive datasets. Duties included: publishing work, presenting at national conferences, mentoring undergraduate student researchers, writing proposals, and preparing yearly reports for the NSF GOALI grant.
- Taught two sections of *Production Planning and Inventory Control* with full course responsibility.

## Publications

### Most Recent (15 out of 54) Publications

- Conventions used in my publications list throughout this CV:
    - **Authorship order** follows the [traditional scientific authorship conventions](#), where PI is placed last (or second-to-last in papers stemming from collaborative grants, e.g., with Cavuoto or Rigdon).
    - \* and § are used to denote graduate and undergraduate students that I advised/mentored.
1. Hu\*, Q., Mehdizadeh\*, A., Vinel, A., Cai\*, M., Rigdon, SE., Zhang, W., & **Megahed, FM.** (2023). Shortest Path Problems with a Crash Risk Objective. *Transportation Research Record*. 03611981231195053.
  2. Kheiri\*, SK., Vahedi\*, Z., Sun, H., **Megahed, FM.**, & Cavuoto, LA. (2023). Human Reliability Modeling in Occupational Environments Toward a Safe and Productive Operator 4.0. *International Journal of Industrial Ergonomics*. 97, 103479.
  3. Alhwiti\*, T., Aldrugh, S., & **Megahed, FM.** (2023). Predicting in-Hospital Mortality after Transcatheter Aortic Valve Replacement using Administrative Data and Machine Learning. *Scientific Reports*. 13 (1), 10252.
  4. Dolatsara\*, HA., Chen, Y-J., Leonard, RD., **Megahed, FM.**, & Jones-Farmer, LA. (2023). Explaining Predictive Model Performance: An Experimental Study of Data Preparation and Model Choice. *Big Data*. 11 (3), 199-214.

5. **Megahed, FM.**, Chen, YJ., Ferris, JA., Knoth, S., & Jones-Farmer, LA. (2023). How Generative Ai Models Such as Chatgpt can be (Mis) Used in Spc Practice, Education, and Research? an Exploratory Study. *Quality Engineering*. 1-29.
6. Vahedi\*, Z., Kheiri\*, SK., Hajifar\*, S., Lamooki\*, SR., Sun, H., **Megahed, FM.**, & Cavuoto, LA. (2023). The Relationship Between Ratings of Perceived Exertion (RPE) and Relative Strength for a Fatiguing Dynamic Upper Extremity Task: A Consideration of Multiple Cycles and Conditions. *Journal of Occupational and Environmental Hygiene*. 20 (3-4), 136-142.
7. Lamooki\*, S Ragani., Hajifar\*, S., Hannan, J., Sun, H., Megahed, F., & Cavuoto, L. (2022). Classifying Tasks Performed by Electrical Line Workers using a Wrist-Worn Sensor: A Data Analytic Approach. *Plos One*. 17 (12), e0261765.
8. Cai\*, M., Mehdizadeh\*, A., Hu\*, Q., Yazdi\*, MAA., Vinel, A., Davis, KC., Xian, H., **Megahed, FM.**, & Rigdon, SE. (2022). Hierarchical Point Process Models for Recurring Safety Critical Events Involving Commercial Truck Drivers: A Reliability Framework for Human Performance Modeling. *Journal of Quality Technology*. 54 (4), 466-484.
9. **Megahed, FM.**, Jones-Farmer, LA., Ma\*, Y., & Rigdon, SE. (2022). Explaining the Varying Patterns of COVID-19 Deaths Across the United States: 2-Stage Time Series Clustering Framework. *JMIR Public Health and Surveillance*. 8 (7), e32164.
10. Lamooki\*, SR., Hajifar\*, S., Kang, J., Sun, H., **Megahed, FM.**, & Cavuoto, LA. (2022). A Data Analytic End-to-End Framework for the Automated Quantification of Ergonomic Risk Factors Across Multiple Tasks using a Single Wearable Sensor. *Applied Ergonomics*. 102, 103732.
11. **Megahed, FM.**, Jones-Farmer, LA., Zhao\*, L., & Rigdon, SE. (2021). Modeling the Differences in the Time-Series Profiles of New COVID-19 Daily Confirmed Cases in 3,108 Contiguous US Counties: A Retrospective Analysis. *PLOS ONE*. 16 (11), e0242896.
12. Mehdizadeh\*, A., Yazdi\*, MAA., Cai\*, M., Hu\*, Q., Vinel, A., Rigdon, SE., Davis, K., & **Megahed, FM.** (2021). Predicting Unsafe Driving Risk among Commercial Truck Drivers using Machine Learning: Lessons Learned from the Surveillance of 20 Million Driving Miles. *Accident Analysis & Prevention*. 159, 106285.
13. Romero, D., Wuest, T., Keepers, M., Cavuoto, LA., & **Megahed, FM.** (2021). Smart Wearable and Collaborative Technologies for the Operator 4.0 in the Present and Post-COVID Digital Manufacturing Worlds. *Smart and Sustainable Manufacturing Systems*. 5 (1), 148-166.
14. Lamooki\*, SR., Kang, J., Cavuoto, LA., **Megahed, FM.**, & Jones-Farmer, LA. (2021). Personalized and Nonparametric Framework for Detecting Changes in Gait Cycles. *IEEE Sensors Journal*. 21 (17), 19236-19246.
15. Cai\*, M., Yazdi\*, MAA., Mehdizadeh\*, A., Hu\*, Q., Vinel, A., Davis, K., Xian, H., **Megahed, FM.**, & Rigdon, SE. (2021). The Association Between Crashes and Safety-Critical Events: Synthesized Evidence from Crash Reports and Naturalistic Driving Data among Commercial Truck Drivers. *Transportation Research Part C: Emerging Technologies*. 126, 103016.

## Invited Papers/Discussions

1. **Megahed, FM.**, Chen, YJ., Megahed, A., Ong, Y., Altman, N., & Krzywinski, M. (2021). The Class Imbalance Problem. *Nat. Methods*. 18 (11), 1270-1272.
2. Maman\*, ZS., Lu\*, L., **Megahed, FM.**, & Cavuoto, LA. (2019). A DMAIC Perspective on Physical Fatigue Management. *Professional Safety*. 64 (6), 26-27.
3. **Megahed, FM.** (2019). Discussion on “real-Time Monitoring of Events Applied to Syndromic Surveillance”. *Quality Engineering*. 31 (1), 97-104.

## A Sample of Funded Projects

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1. “Reliability Modeling of Shoulder Fatigue and Recovery for Warehouse Operators Performing Dynamic Tasks”, Co-I (w/ Lora Cavuoto and Hongyue Sun), **National Institute of Occupational Safety & Health**, \$361,486 ( Share: \$119,621), 2020–2023.
2. “Text Mining of Social Media Mentions and Customer Survey Responses”, PI (w/ Alex Vinel), **Aflac**, \$72,000 ( Share: \$72,000), 2016–2017.
3. “GOALI:Collaborative Research: Human Maintenance- A Prognostics Framework to Model Changes in Drivers’ Safety Performance and Optimize Dispatching Policies”, PI (w/ Alex Vinel, Doug Mettenburg and Steve Rigdon), **National Science Foundation**, \$296,206 ( Share: \$212,716), 2016–2020.
4. “Advancing Safety Surveillance using Individualized Sensor Technology”, Co-I (w/ Lora Cavuoto), **American Society for Safety Professionals Foundation**, \$300,000 ( Share: \$147,500), 2015–2018.
5. “Data Analytics for Reliability Testing of Electronics Packaging”, Investigator (w/ John Evans and Jeff Suhling), **Department of Defense (through Mechanical Engineering)**, \$21,099 ( Share: \$21,099), 2015–2016.

## Professional Experience

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 **Institut fur Textiltechnik der RWTH Aachen**  Aachen, Germany  Summer 2007

 *Undergraduate Researcher*

- Developed a GUI to measure yarn properties using image processing techniques.
- Developed a GUI to measure various quality parameters of non-woven fabrics.
- Researched fiber migration in air jet spun yarns.





 **British Gas**  Cairo, Egypt  Summer 2007/2008

 *Engineering, Health and Safety Intern*

- Assisted in coordinating the Behavioral Based Safety Program, prepared the Health Risk Assessment file for all BG Egypt Activities.
- Participated in the weekly safety inspection for the *Egyptian Liquefied Gas Site*.
- Trained radio operators on the emergency response procedures.

## Skills

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- **Statistical Packages:** , Minitab, JMP.
- **Optimization Software:** Lindo/Lingo; some exposure to Cplex.
- **Programming Languages:** ; some experience with MATLAB and Python.
- **Data Visualization:** , Tableau, PowerBI; some exposure to D3.js.
- **Applications:** , [rmarkdown](#), [flexdashboard](#), [xarigan](#); and *gradio*: [TAVR web app](#)