Alaa Alghwiri, Ph.D.

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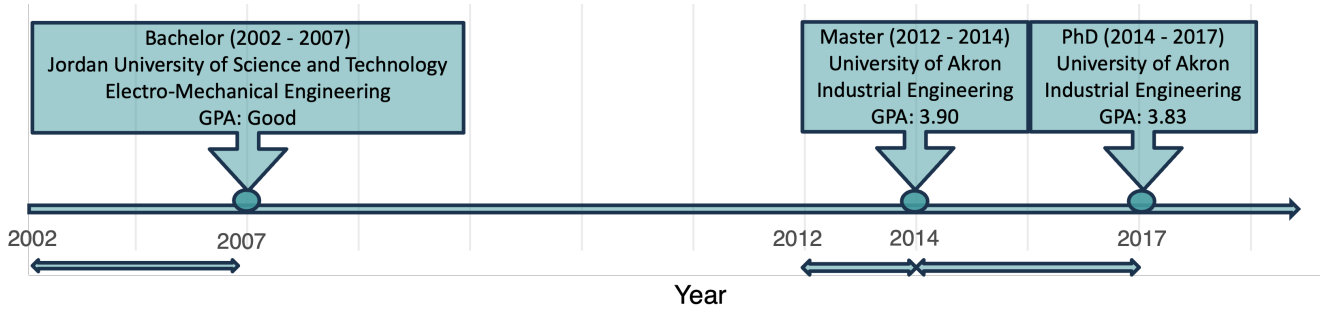
Portfolio | LinkedIn Account | ResearchGate | GitHub

Professional Summary

Highly skilled data scientist, entrepreneur, and educator with a Ph.D. in Industrial Engineering, specializing in data science and simulation. Over seven years of impactful experience in diverse industries including transportation, higher education, energy, and healthcare. My primary research focus revolves around developing advanced data science methodologies to address critical challenges in healthcare and energy. I have published significant research in high-impact journals and I am proficient in teaching data science courses that encompass foundational coding, mathematics, and statistics, as well as applied data science and machine learning algorithms using R and Python programming languages. I am an effective communicator, adept problem solver, and collaborative team player

EDUCATION



Teaching Experience

Adjunct Professor| TrineOnline University | Part Time | April 2024 - Current

- Deliver course materials focused on statistical methods and analysis techniques pertinent to IT research. Guide students in applying statistical tools to real-world IT problems and projects
- Teach fundamental and advanced concepts of computer science using Python. Create hands-on projects to reinforce learning and encourage practical application of programming skills
- Instruct students on the principles and practices of data science and big data analytics

Data Science Instructor | Simplilearn | Part Time | April 2023- Current (Rating: 4.6/5.0)

- Instructed comprehensive courses on Data Science, covering a spectrum from foundational mathematical and statistical concepts to advanced topics
- Designed and delivered engaging modules on data exploration, visualization techniques, and best practices, fostering a deep understanding among students
- Equipped learners with practical skills in applied Data Science and Machine Learning, utilizing both R and Python programming languages
- Received consistently positive feedback for adeptly balancing theoretical knowledge with hands-on learning experiences, ensuring students grasp concepts effectively and confidently apply them in real-world scenarios
- Demonstrated expertise in simplifying complex concepts, fostering a dynamic and inclusive learning environment, and providing personalized guidance to students of varying skill levels, contributing to high course completion rates and student satisfaction

Teaching

Course Title	Level	Time (hours)	University/Company
Programming Basics Using R and Python	**B.Sc. and M.Sc.**	**84**	**Simplilearn**
Statistics Essential for Data Science	**B.Sc. and M.Sc.**	**68**	**Simplilearn**
Visualization and Story Telling with Tableau	**B.Sc. and M.Sc.**	**62**	**Simplilearn**
Applied Data Science and Machine Learning Using R and Python	**B.Sc. and M.Sc.**	**213**	**Simplilearn**

Entrepreneurial Experience

C0-Founder and CTO | Algebra Intelligence | Part Time | January 2020 - November 2022

- Led a pioneering team in creating and deploying Taqtak, a groundbreaking mobile/web application that revolutionizes real-time monitoring within energy plants. Successfully secured $1,060,000 in funding in the pre-seed stage
    - Spearheaded the development lifecycle from conceptualization to execution, overseeing database architecture, backend infrastructure, and front-end design to ensure seamless integration and optimal performance
- Led the data science team in the conceptualization and development of an energy generation forecasting tool using advanced statistical analysis and machine learning algorithms

Professional Experience

Senior Research/Data Scientist | University of Pittsburgh | Center for Population Health Management | Full Time | July 2022 - Current

- Extensive experience utilizing Electronic Health Records (EHR) for analysis, demonstrating a deep familiarity with preparing and leveraging EHR data for both statistical and predictive purposes
- Utilized causal forest algorithms to evaluate heterogeneity in treatment effects, allowing for a nuanced understanding of how different patient subgroups respond to various interventions
- Spearheaded the development of precise predictive models aimed at identifying patients susceptible to adverse events through the implementation of sophisticated machine learning methodologies
- Tested the effectiveness of a multifaceted Electronic Health Records (EHR)-based Population Health Management (PHM) intervention to improve evidence-based Chronic Kidney Disease care in high-risk patients (Utilized A/B testing, Mixed-effect modeling and Survival Analysis)
- Utilized mixed-effect models, factor and principal component analyses to analyze the impact of various factors on pain, fatigue, and depression
- Designed and implemented a Tkinter application in Python to map addresses into the Area Deprivation Index (ADI), facilitating targeted resource allocation for underserved communities

Data scientist | University of Pittsburgh | Office of the Provost | Full Time | October 2017- June 2022

- Utilized data analytics tools to automate generation of yearly/ad-hoc insights in static and dynamic formats, integrating data from multiple resources for students, faculty, and University data management
- Improved University of Pittsburgh's US News Ranking by 4 steps (between 2020 and 2021) using cutting-edge Machine Learning techniques including SVM, Random Forest, and Gradient Boosting

- Developed highly accurate (96%) predictive models for students' success indicators (retention, dropout, and graduation) across all 3 regional campuses, enabling proactive advising for students in need
- Collaborated with schools' deans to make data-informed investment decisions, optimizing the school's US News and World Report ranking
- Automated recurring reports on gender and ethnic group equity, as well as admission and financial aid reports for the office of the provost and deans

Honors and Awards

- Honored listee in Marquis Who's Who America (2024)
- As a co-founder at Algebra Intelligence, my partner and I successfully secured $750,000 in seed funding in November 2022, led by Ibtikar venture capital (Link)
- As a co-founder at Algebra Intelligence, my partner and I successfully secured $310,000 in pre-seed funding in May 2021, led by Oasis500 venture capital (Link)
- Full scholarship including tuition and salary to pursue M.Sc. and PhD at University of Akron (2012-2017)

Peer-Reviewed Articles (Publications listed below are hyperlinked for easy access)

- **Journals:**
  - Melanie R Weltman, Linda-Marie U Lavenburg, Zhuoheng Han, **Alaa A Alghwiri**, Mitra Mosslemi, Bruce L Rollman, Gary S Fischer, Thomas D Nolin, Jonathan G Yabes, Manisha Jhamb. **Population Health Management and Guideline-Concordant Care in CKD: A Secondary Analysis of K-CHAMP.** Journal of the American Society of Nephrology, November 1, 2024. DOI: 10.1681/ASN.0000000544
  - Kallem, Cramer J.; **Alghwiri, Alaa A**.; Yabes, Jonathan; Erickson, Sarah; Han, Zhuoheng; Roumelioti, Maria-Eleni; Steel, Jennifer L.; Jhamb, Manisha,a; Unruh, Mark. **Diurnal and Daily Symptom Variation in Patients with End-Stage Kidney Disease: An Ecological Momentary Assessment Study**. Clinical Journal of the American Society of Nephrology, July 16, 2024. DOI: 10.2215/CJN.0000000000000524
  - Kallem, Cramer J.; **Alghwiri, Alaa A.;** Yabes, Jonathan G.; Roumelioti, Maria-Eleni; Erickson, Sarah; Rollman, Bruce L.; Weisbord, Steven; Unruh, Mark; Vodovotz, Yoram; Jhamb, Manisha,a; Steel, Jennifer L. **Association of Symptoms and Collaborative Care Intervention (TĀCcare) with Systemic Inflammation Biomarkers in End-Stage Kidney Disease**. Kidney360, July 16, 2024. DOI: 10.34067/KID.0000000000000512
  - Jhamb, M., Weltman, M. R., Devaraj, S. M., Lavenburg, L. M. U., Han, Z., **Alghwiri, A. A**., ... & Yabes, J. G. (2024). **Electronic Health Record Population Health Management for Chronic Kidney Disease Care: A Cluster Randomized Clinical Trial**. *JAMA Internal Medicine*.
  - Al-Zaiti, S. S., **Alghwiri, A. A**., Hu, X., Clermont, G., Peace, A., Macfarlane, P., & Bond, R. (2022) **A clinician's guide to understanding and critically appraising machine learning studies: a checklist for Ruling Out Bias Using Standard Tools in Machine Learning (ROBUST-ML)**. *European Heart Journal-Digital Health*, *3*(2), 125-140
  - Alghwiri, A. A., Almomani, F., **Alghwiri, A. A.**, & Whitney, S. L. (2021). Predictors of sleep quality among university students: the use of advanced machine learning techniques. *Sleep and Breathing*, *25*, 1119-1126
- **Published abstracts and proceedings:**
  - M.R. Weltman, **A.A. Alghwiri**, Z. Han, L.U. Lavenburg, T.D. Nolin, J.G. Yabes,, Y. Chen, M. Jhamb. **Prediction of medication therapy problems in patients with moderate- to high-risk chronic kidney disease**: American Society of Nephrology (ASN) 2024
  - Linda-Marie Lavenburg, Zhuoheng Han, Mitra Mosslemi, **Alaa Alghwiri,** Thomas Nolin, Melanie Weltman, Jonathan Yabes, Manisha Jhamb. **Impact of Population Health**

Management to Modify Disparate Use of SGLT2i/GLP1Ras: American Society of Nephrology (ASN) 2024

- Kallem CJ, Roumelioti M, **Alghwiri AA**, Yabes JG, Jhamb M, Unruh M. **Day-to-day and diurnal variations in patient-reported symptoms among patients on dialysis**. Poster presentation at: National Kidney Foundation 2024 Spring Clinical Meetings. May 14-18, 2024; Long Beach, CA. Abstract ID: 4454
- Kallem CJ, **Alghwiri AA,** Yabes JG, Roumelioti M, Erickson S, Unruh M, Vodovotz Y, Jhamb M, Steel JL. **Associations between pain, depression, fatigue, and cytokines in patients with end-stage kidney disease**. Poster presentation at: Society of Behavioral Medicine 45th Annual Meeting & Scientific Sessions. March 13-16, 2024; Philadelphia, PA. Abstract ID: 1623084
- Manisha Jhamb, Melanie Weltman, Susan Devaraj, Linda-Marie Lavenburg, Zhuoheng Han, **Alaa Alghwiri**, Gary Fischer, Bruce Rollman, Thomas Nolin, Jonathan Yabes. **Electronic Health Record based Population Health Management to optimize care in CKD: A Cluster Randomized Clinical Trial (Kidney CHAMP)**: American Society of Nephrology (ASN) 2023; Philadelphia, PA
- MR Weltman, Z Han, **AA Alghwiri**, J Yabes, LU Lavenburg, TD Nolin, M Jhamb. **Use of guideline-recommended medication therapy in a high-risk chronic kidney disease population in the Kidney CHAMP trial**: American Society of Nephrology (ASN) 2023; Philadelphia, PA
- Susan M. Devaraj, Jonathan Yabes, **Alaa Alghwiri**, Manqi Cai, Linda-Marie Lavenburg, Khaled Abdel-Kader, Manisha Jhamb. **A demographic and community characteristic comparison of advanced chronic kidney disease patients seeing versus not seeing a nephrologist**: American Society of Nephrology (ASN) 2022; Tampa, FL
- **Alghwiri, A.**, Wang, S., & Coleman, J. D. (2017). **University Parking System Analysis through Discrete Event Simulation**. In *IIE Annual Conference. Proceedings* (pp. 2039-2044). Institute of Industrial and Systems Engineers (IISE)
- **Alghwiri, A.**, Wang, S., & Coleman, J. D. (2017). **Modeling and Optimizing University Shuttle Bus System through Bus Diversions**. In *IIE Annual Conference. Proceedings* (pp. 2045-2050). Institute of Industrial and Systems Engineers (IISE)

Talks and Presentations (** denotes my role as a main presenter)

- ****Alghwiri, A.**, Monica Rattigan, Nancy Tannery, **Evaluating the Impact of Digital Content on Student Course Outcomes,** Advanced Analytics Summit- University of Pittsburgh, 2021
- Won Kaggle competition arranged by Microsoft Company, Pittsburgh-PA (2021), **Using Advanced Machine Learning Approaches to Predict Crime in California**
- ****Alghwiri, A.**, Amanda Brodish, Steven Wisniewski, **Viewbook Analyses Using Data-Driven Decision-Making Approaches.** Cornell University Forum- University of Pittsburgh, 2019
- ****Alghwiri, A.**, Wang, S., & Coleman, J. D. (2017). **University Parking System Analysis through Discrete Event Simulation**. In *IIE Annual Conference. Proceedings* (pp. 2039-2044). Institute of Industrial and Systems Engineers (IISE)
- ****Alghwiri, A.**, Wang, S., & Coleman, J. D. (2017). **Modeling and Optimizing University Shuttle Bus System through Bus Diversions**. In *IIE Annual Conference. Proceedings* (pp. 2045-2050). Institute of Industrial and Systems Engineers (IISE)

Guest Speaking

- **Invited Speaker, "Decision Making Under Uncertainty Using Reinforcement Learning"** University of Pittsburgh- School of Nursing, 2020.
- **Invited Speaker, "Introduction to Big Data Analytics in The Healthcare Industry"** University of Pittsburgh- School of Nursing, 2019.

Editorial and Media Reports About my Achievements

- 10 sustainable startups in Middle East North Africa (MENA) (Link)
- Who's who Energy, Water and Environment (Link)
- Digitizing the energy sector in Jordan (Link)

Committees

- Advisory board member at Yarmouk University- Computer Science Department (2022 – Present)
- Advisory board lead at Algebra Intelligence (2022 – Present)

Membership in Professional and Scientific Societies

- American Society for Quality (ASQ)
- Institute of Industrial and System Engineering (IISE)
- American Society of Nephrology (ASN)

TRAINING & CERTIFICATES

- Computational thinking using Python- 2022 (MITx)
- Introduction to Computer Science and Programming Using Python- 2020 (MITx)
- SQL Tips, Tricks, & Techniques- 2019 (LinkedIn Learning)
- Git Branches, Merges, and Remotes- 2019 (LinkedIn Learning)
- Python for Data Science- 2018 (Udemy)
- Extending Hadoop for Data Science- 2018 (LinkedIn Learning)
- Machine Learning A-Z: Hands on Using R and Python- 2018 (Udemy)
- Learning Git and GitHub- 2018 (LinkedIn Learning)
- Mastering Tableau for Visualization- 2018 (LinkedIn Learning)
- Advanced SQL for Data Scientists- 2017 (LinkedIn Learning)
- Apache Spark for Big Data Applications- 2017 (LinkedIn Learning)
- Machine Learning and AI foundation- 2017 (LinkedIn Learning)
- Practical Data Science in R- Certificate, 2017 (Udemy)
- Advanced Analytics in R for Data Science- 2017 (Udemy)
- R Programming A-Z- 2017 (Udemy)
- AWS Big Data- 2017 (LinkedIn Learning)
- Certified Six Sigma Green Belt, American Society for Quality (ASQ)- 2017
- Rapid Modeling with Simio Intelligent Objects- 2016

COMPUTER SKILLS

- Programming/Scripting: Python, R, Julia, SQL, VBA, Unix/Linux, Git
- Databases: Hadoop, Spark, PostgreSQL, MySQL, Oracle, Apache Cassandra, Mongo DB
- Cloud Services: Digital Ocean, Amazon Web Services, Google Cloud, and Microsoft Azure
- Other Tools: Tableau, Jupyter Notebook, Toad, Ubuntu VM, MS Office, Simio, Jira and Docker

SOFT SKILLS

- Critical Thinking, Curiosity, Problem Solving, Professional Communication, Creativity, Lifetime Learning, Professional Presentations, Public Speaking, Multi-domain Knowledge and Story Telling