Dr. Hamoud Aljamaan

Personal Data

Place and Date of Birth:	Kuwait, 1985
Address:	KFUPM, ICS dept. Building: 22, Room: 323
Office:	+966 13 8601150
email:	hjamaan AT kfupm DOT edu DOT sa

Education

Dec 2015	**Doctor of Philosophy** in Computer Science | Emphasis: Software Engineering **University of Ottawa**, Ottawa, Canada Academic supervisor: Prof. Timothy Lethbridge Dissertation: *"Model-Oriented Tracing Language*: Producing Execution Traces from Tracepoints Injected into Code Generated from UML Models" [pdf]
June 2009	**Master of science** in Computer Science | Emphasis: Software Engineering **King Fahd University of Petroleum and Minerals**, Dhahran, Saudi Arabia Academic supervisor: Dr. Mahmoud Elish Thesis: "Software Quality Assessment using Ensemble Models" [pdf]
June 2006	**Bachelor of science** in Computer Science **King Saud University**, Riyadh, Saudi Arabia. Graduation project supervisor: Dr. Mohsen Denguir Graduation Project: "Electronic Ordering System Using Hand-held Devices"

Work Experience

Associate Professor

Oct 2025 – Now	**King Fahd University of Petroleum and Minerals**, Saudi Arabia. *Information and Computer Science department* + SWE 206 Introduction to Software Engineering + ICS 557 Advanced Machine Learning

Assistant Professor

Jan 2016 – Oct 2025	**King Fahd University of Petroleum and Minerals**, Saudi Arabia. *Information and Computer Science department* + ICS 103 Computer Programming in C + SWE 206 Introduction to Software Engineering + SWE 311 Principles of Software Engineering + SWE 316 Software Design and Architecture + SWE 411 Software Engineering Project I + SWE 412 Software Engineering Project II + ICS 500 Research Methods and Experiment Design in Computing + ICS 574 Big Data Analytics + ICS 557 Advanced Machine Learning

Chairman

Jan 2019 – Aug 2023

King Fahd University of Petroleum and Minerals, Saudi Arabia.
Information and Computer Science department
Key accomplishments
+ Establishment of the Artificial Intelligence and Machine Learning undergraduate concentration
+ Establishment of the Master of Artificial Intelligence program
+ Establishment of the Cybersecurity and Blockchains undergraduate concentration
+ Establishment of the Master of Cybersecurity programm
+ Establishment of the annual "4IR Data Science Summer School" for Aramco employees since 2019
+ Establishment of the joint Aramco-KFUPM Cybersecurity Chair agreement
+ Establishment of the department female undergraduate and graduate programs
+ Major Revision for the Computer Science undergraduate program
+ Major Revision for the Software Engineering undergraduate program
+ Awarded the ABET re-accreditation for Computer Science undergraduate program
+ Awarded the ABET re-accreditation for Software Engineering undergraduate program
+ Awarded the National Cybersecurity Authority education alignment certificate for the department Cybersecurity masters programs
+ Managed Projects with a total budget exceeding 4 Millions SAR.
+ Recruiting world class new faculty members (8 Graduate Assistants, 8 Assistant Professors, 4 Associate Professors, and 2 Professors)

Judge

2019 - Now

Mawhiba, Riyadh, Saudi Arabia.
Member of the judging committee for the National Olympiad for Scientific Creativity "Ibda'a". Area of specialization: Software and Robotics.

Summer Consultant

Summer 2018

Saudi Aramco, Dhahran, Saudi Arabia.
EXPEC Computer Center / Exploration Applications Services Dept / Applications Technology Division
Review current software development approach and methodology for software development for Exploration, and recommend improvements and best practices in quality, automation, integration and delivery.

Summer 2017

Saudi Aramco, Dhahran, Saudi Arabia.
Loss Prevention Department / Risk Assessment Group
SAP Environment, Health, Safety Management (EHSM) module upgrade for the Safety Recommendations System

Summer 2016

Saudi Aramco, Dhahran, Saudi Arabia.
EXPEC Computer Center/ Upstream Database Services Division
Predicting Electrical submersible pumps (ESP) failure using machine learning techniques

Teaching Assistant

Sept 2012 – Dec 2014

University of Ottawa, Canada.
School of Electrical Engineering and Computer Science
Prepared and Supervised laboratories. Marked quizzes and assignments. Provided feedback on students projects. Proctored exams.
+ ITI1120 Introduction to Computing I - Fall 2012 / Fall 2013
+ ITI1121 Introduction to Computing II - Winter 2013 / Summer 2014
+ SEG2105 Introduction to Software Engineering - Fall 2014
+ SEG2106 Software Construction - Winter 2013 / Summer 2014

Full-Time Researcher

Jan 2010 – Dec 2015	**University of Ottawa**, Canada. *Complexity Reduction in Software Engineering (CRuiSE) group* Member of the CRuiSE research group under the supervision of Prof. Timothy Lethbridge. Conducted research on textual modeling languages and contributed to the development on the Umple language adopting these key practises: + Model-Driven Development (MDD) + Test-Driven Development (TDD) + Agile Development + Open source using svn/git

Lecturer

July 2009 – Dec 2015	**King Fahd University of Petroleum and Minerals**, Saudi Arabia. *Information and Computer Science department* Prepared and given Lectures to undergraduate students on programming principles using Java. + ICS 102 Introduction to Computing I

Graduate Assistant

Nov 2006 – June 2009	**King Fahd University of Petroleum and Minerals**, Saudi Arabia. *Information and Computer Science department* Prepared and Supervised laboratories. Marked quizzes and assignments. Provided feedback on students projects. Proctored exams. + ICS 102 Introduction to Computing I + ICS 103 Computer Programming in C

Summer Intern

Summer 2005	**Saudi Aramco**, Dhahran, Saudi Arabia. *Integrated Solution Service Department (ISSD)* Developed and enhanced an image processing program in the ISSD.

Publications

Journals

[J21] S. J. Alsunaidi, **Hamoud Aljamaan**, and M. Hammoudeh. 2026. "DIVE: A Multi-Label Smart Contract Vulnerability Dataset." *Scientific Data*, 13, 492 (2026). DOI: https://doi.org/10.1038/s41597-026-07025-5

[J20] Shikah J. Alsunaidi, **Hamoud Aljamaan**, and Mohammad Hammoudeh. 2025. "Leveraging Machine Learning Models to Improve Smart Contract Security: A Survey of Vulnerabilities and Detection Methods." *ACM Comput. Surv.*. (October 2025). DOI: https://doi.org/10.1145/3772367

[J19] R. Sandouka, **Hamoud Aljamaan**, "Cross-Language Code Smell Detection via Transfer Learning." *Applied Sciences*, 15, 9293 (Aug 2025). DOI: https://doi.org/10.3390/app15179293

[J18] N. Alomari, A. Alazba, **Hamoud Aljamaan**, M. Alshayeb, "SmellyCode++: Multi-Label Dataset for Code Smell Detection." *Scientific Data*, 12, 1207 (June 2025). DOI: https://doi.org/10.1038/s41597-025-05465-z

[J17] A. Alazba, **Hamoud Aljamaan**, M. Alshayeb, "SmellyBot: An AI-Powered Software Bot for Code Smell Detection." *Software: Practice and Experience*, (June 2025): 1–17. DOI: https://doi.org/10.1002/spe.70006

[J16] R. Baamer, **Hamoud Aljamaan**, "Enhancing Stock Price Forecasting with Deep Learning: Insights from the Saudi Stock Market." *Computational Economics*, (June 2025). DOI: https://doi.org/10.1007/s10614-025-11033-9

[J15] R. Sandouka, **Hamoud Aljamaan**, "Enhancing Python Code Smell Detection with Heterogeneous Ensembles." *International Journal of Software Engineering and Knowledge Engineering*, (2025). DOI: https://doi.org/10.1142/S0218194025500287

[J14] S. Alsunaidi, **Hamoud Aljamaan**, M. Hammoudeh, "MultiTagging: A Vulnerable Smart Contract Labeling and Evaluation Framework." *Electronics*, 13(23), 4616 (2024). DOI: https://doi.org/10.3390/electronics13234616

[J13] **Hamoud Aljamaan**, "Dynamic Stacking Ensemble for Cross-Language Code Smell Detection." *PeerJ Computer Science*, 10:e2254 (2024). DOI: https://doi.org/10.7717/peerj-cs.2254

[J12] A. Alazba, **Hamoud Aljamaan**, M. Alshayeb, "CoRT: Transformer-Based Code Representations with Self-Supervision by Predicting Reserved Words for Code Smell Detection." *Empirical Software Engineering*, 29(3):59 (2024). DOI: https://doi.org/10.1007/s10664-024-10445-9

[J11] A. Alazba, **Hamoud Aljamaan**, M. Alshayeb, "Automated Detection of Class Diagram Smells Using Self-Supervised Learning." *Automated Software Engineering*, 31(1):29 (2024). DOI: https://doi.org/10.1007/s10515-024-00429-w

[J10] A. Alqarni, **Hamoud Aljamaan**, "Leveraging Ensemble Learning with Generative Adversarial Networks for Imbalanced Software Defects Prediction." *Applied Sciences*, 13(24):13319 (2023). DOI: https://doi.org/10.3390/app132413319

[J9] N. Alturayeif, **Hamoud Aljamaan**, J. Hassine, "An Automated Approach to Aspect-Based Sentiment Analysis of Apps Reviews Using Machine and Deep Learning." *Automated Software Engineering*, 30(2):30 (2023). DOI: https://doi.org/10.1007/s10515-023-00397-7

[J8] R. Sandouka, **Hamoud Aljamaan**, "Python Code Smells Detection Using Conventional Machine Learning Models." *PeerJ Computer Science*, 9:e1370 (2023). DOI: https://doi.org/10.7717/peerj-cs.1370

[J7] A. Alazba, **Hamoud Aljamaan**, M. Alshayeb, "Deep Learning Approaches for Bad Smell Detection: A Systematic Literature Review." *Empirical Software Engineering*, 28:77 (2023). DOI: https://doi.org/10.1007/s10664-023-10312-z

[J6] A. Alazba, **Hamoud Aljamaan**, "Software Defect Prediction Using Stacking Generalization of Optimized Tree-Based Ensembles." *Applied Sciences*, 12(9):4577 (Apr 2022). DOI: https://doi.org/10.3390/app12094577

[J5] K. E. Hoque, **Hamoud Aljamaan**, "Impact of Hyperparameter Tuning on Machine Learning Models in Stock Price Forecasting." *IEEE Access*, 9:163815–163830 (2021). DOI: https://doi.org/10.1109/ACCESS.2021.3134138

[J4] T. Lethbridge, **Hamoud Aljamaan**, et al., "Umple: Model-Driven Development for Open Source and Education." *Science of Computer Programming*, 208:102665 (2021). DOI: https://doi.org/10.1016/j.scico.2021.102665

[J3] A. Alazba, **Hamoud Aljamaan**, "Code Smell Detection Using Feature Selection and Stacking Ensemble: An Empirical Investigation." *Information and Software Technology*, 106648 (2021). DOI: https://doi.org/10.1016/j.infsof.2021.106648

[J2] A. Al-Shaaby, **Hamoud Aljamaan**, M. Alshayeb, "Bad Smell Detection Using Machine Learning Techniques: A Systematic Literature Review." *Arabian Journal for Science and Engineering*, 45:2341–2369 (2020). DOI: https://doi.org/10.1007/s13369-019-04311-w

[J1] M. Elish, **Hamoud Aljamaan**, I. Ahmad, "Three Empirical Studies on Predicting Software Maintainability Using Ensemble Methods." *Soft Computing*, 19(9):2511–2524 (2015). DOI: https://doi.org/10.1007/s00500-014-1576-2

Conferences

[C16] N. Alsunaidi, S. Aljbali, Y. Yasin, **Hamoud Aljamaan**, "Arabic Cyberbullying Detection Using Machine Learning: State of the Art Survey." *EASE '23*, Oulu, Finland, 2023, pp. 499–504. DOI: https://doi.org/10.1145/3593434.3593968

[C15] D. Alomari, F. Anis, M. Alabdullatif, **Hamoud Aljamaan**, "A Survey on Botnets Attack Detection Utilizing Machine and Deep Learning Models." *EASE '23*, Oulu, Finland, 2023, pp. 493–498. DOI: https://doi.org/10.1145/3593434.3593967

[C14] S. J. Alsunaidi, R. T. Alraddadi, **Hamoud Aljamaan**, "Twitter Spam Accounts Detection Using Machine Learning Models." *CICN 2022*, Al-Khobar, Saudi Arabia, 2022, pp. 525–531. DOI: https://doi.org/10.1109/CICN56167.2022.10008339

[C13] **Hamoud Aljamaan**, "Voting Heterogeneous Ensemble for Code Smell Detection." *ICMLA 2021*, Pasadena, CA, USA, 2021, pp. 897–902. DOI: https://doi.org/10.1109/ICMLA52953.2021.00148

[C12] N. Alturaief, **Hamoud Aljamaan**, M. Baslyman, "AWARE: Aspect-Based Sentiment Analysis Dataset of Apps Reviews for Requirements Elicitation." *ASEW 2021*, Melbourne, Australia, 2021, pp. 211–218. DOI: https://doi.org/10.1109/ASEW52652.2021.00049

[C11] **Hamoud Aljamaan**, A. Alazba, "Software Defect Prediction Using Tree-Based Ensembles." *PROMISE '20*, Virtual, USA, 2020, pp. 1–10. DOI: https://doi.org/10.1145/3416508.3417114

[C10] **Hamoud Aljamaan**, M. Garzón, T. C. Lethbridge, "MOTL: A Textual Language for Trace Specification of State Machines and Associations." *CASCON 2015*, Markham, Canada, pp. 101–110.

[C9] **Hamoud Aljamaan**, M. Garzón, T. C. Lethbridge, A. Forward, "UmpleRun: A Dynamic Analysis Tool for Textually Modeled State Machines Using Umple." *EXE@MoDELS*, Ottawa, Canada, 2015, pp. 16–20.

[C8] M. Garzón, **Hamoud Aljamaan**, T. C. Lethbridge, "Umple: A Framework for Model-Driven Development of Object-Oriented Systems." *SANER 2015*, Montreal, Canada, pp. 494–498.

[C7] M. Garzón, T. C. Lethbridge, **Hamoud Aljamaan**, O. Badreddin, "Reverse Engineering of Object-Oriented Code into Umple Using an Incremental and Rule-Based Approach." *CASCON 2014*, Markham, Canada, pp. 91–105.

[C6] **Hamoud Aljamaan**, T. C. Lethbridge, O. Badreddin, G. Guest, A. Forward, "Specifying Trace Directives for UML Attributes and State Machines." *MODELSWARD 2014*, Lisbon, Portugal, pp. 79–86. DOI: https://doi.org/10.5220/0004711500790086

[C5] O. Badreddin, T. C. Lethbridge, A. Forward, M. Elaasar, **Hamoud Aljamaan**, M. Garzón, "Enhanced Code Generation from UML Composite State Machines." *MODELSWARD 2014*, Lisbon, Portugal, pp. 235–245. DOI: https://doi.org/10.5220/0004699602350245

[C4] V. Abdelzad, **Hamoud Aljamaan**, O. Adesina, M. Garzón, T. Lethbridge, "A Model-Driven Solution for Financial Data Representation Expressed in FIXML." *TTC@STAF*, 2014, pp. 65–70.

[C3] **Hamoud Aljamaan**, M. Elish, I. Ahmad, "An Ensemble of Computational Intelligence Models for Software Maintenance Effort Prediction." *IWANN 2013*, pp. 592–603.

[C2] **Hamoud Aljamaan**, T. C. Lethbridge, "Towards Tracing at the Model Level." *WCRE 2012*, Kingston, Canada, pp. 495–498. DOI: https://doi.org/10.1109/WCRE.2012.59

[C1] **Hamoud Aljamaan**, M. Elish, "An Empirical Study of Bagging and Boosting Ensembles for Identifying Faulty Classes in Object-Oriented Software." *CIDM 2009*, Nashville, USA, pp. 187–194. DOI: https://doi.org/10.1109/CIDM.2009.4938648

Patent

[P1] A. Alazba, **Hamoud Aljamaan**, M. Alshayeb, "System and Method for Code Smell Detection Using Transformer-Based Code Representations with Self-Supervision by Predicting Reserved Words." U.S. Patent (US 12,591,499 B2) , filed Jan 31, 2024; Granted March 31, 2026. Assignee: King Fahd University of Petroleum and Minerals.

Projects

Completed | **Umple: a model oriented programming language**
CRuiSE, University of Ottawa, Canada
Umple is a technology for adding UML constructs to languages such as Java and PHP. It can also be used for pure modelling, or can be seen as a textual representation of UML in which you can embed code from other languages. It generates state of the art code for state diagrams and class diagrams, and is fully open source.

Completed | **MOTL: a model oriented tracing language**
CRuiSE, University of Ottawa, Canada
MOTL is a textual model-level tracing language, implemented as part of Umple, that operates at the model level to allow trace specification of textually modeled UML constructs. MOTL allows tracing of UML associations, attributes and state machines. Constraints can be imposed to limit the scope of tracing.

2008 | **School Information System**
Research Institute, KFUPM, Saudi Arabia
Requested by *Ministry of Education, Saudi Arabia*
Team Member - Developed a Software Requirement Specification (SRS) for an online School Management System and Teacher Affairs System for the Ministry of Education, Saudi Arabia.

Skills

Programming:	Python, Java, C/C++, Matlab, Assembly
Machine learning:	Scikit-learn, Weka
Software Development:	UML2, Umple, MDD, TDD, JET, Xtend, Xpand, Junit, ANTLR
Web Development:	PHP, HTML, XML
Tracing Tools:	log4j2, Java Logging framework, LTTng
DataBase:	Mysql, Oracle
Data Analysis:	R language, STATISTICA
Software Version Control:	SVN, GIT
Operating Systems:	Linux/UNIX, Mac OS, Windows
IDE & Editors:	Google Colab, Jupyter notebook, eclipse 4.x, LaTeX

Research Funding

2024 - 2025 | **King Fahd University of Petroleum and Minerals (KFUPM)**
Internal Research Project
Project Title: Leveraging Transfer Learning for Code Smell Detection Across Different Programming Languages
Role: Principal Investigator (PI)
Status: Completed
Duration: 1 year

2020 - 2024 | **Saudi Aramco**
External Project
Project Title: Researching Upstream Challenges through 4IR Summer School
Role: Cost Center Manager, Member
Project number: ICS-2506
Duration: 4 years
Budget: SR 2.5M

2019 | **Saudi Aramco**
External Project
Project Title: Studying the feasibility of establishing 4IR Summer School
Role: Cost Center Manager, Member
Project number: ICS-2468
Duration: 1 year
Budget: SR 560,000

2018 | **King Fahd University of Petroleum and Minerals (KFUPM)**
Start up Research Grant
Project Title: Software Maintainability Prediction using Hybrid Data Mining Prediction Models.
Role: PI
Project number: SR 171014
Duration: 11 months
Budget: SR 60,500

2008 | **King Abdulaziz City for Science and Technology (KACST)**
Master thesis funding
Project Title: Software Quality Assessment using Ensemble Models.
Role: PI
Project number: GSP-17-132
Duration: 1 year
Budget: SR 50,000

Thesis Supervision

- **[Ongoing]** Dalal Aldowaihi, PhD in Computer Science.
- **[Ongoing]** Aishah Altamimi, PhD in Computer Science.
- **[Ongoing]** Yasmin Yasin, PhD in Computer Science.
- **[Ongoing]** Raghad Alzahrani, Msc in Computer Science.
- **[Ongoing]** Norah Alsunaidi, Msc in Computer Science.
- **[Completed]** Shikah Alsunaidi, PhD in Computer Science, Dec 2025.
  - Thesis title: "Lifecycle-Aware and Drift-Resilient Machine Learning for Smart Contract Vulnerability Detection".
- **[Completed]** Rana Sandouka, Msc in Computer Science, Nov 2025.
  - Thesis title: "Transfer Learning Approaches for Cross-Language Code Smell Detection".
- **[Completed]** Rana Baamer, Msc in Computer Science, Sept 2025.
  - Thesis title: "Enhanced Saudi Stock Prices Forecasting with Technical Indicators and Deep Learning Ensembles".
- **[Completed]** Amal Alazba, PhD in Computer Science, Dec 2023.

  - Thesis title: "A Framework for Software Code and Model Smell Detection through Self Supervised Learning".
- **[Completed]** Amani Alqarni, Msc in Computer Science, Dec 2023.
  - Thesis title: "Leveraging Ensemble Learning with Generative Adversarial Networks in Imbalanced Software Defects Prediction".
- **[Completed]** Lama Albakhat, Msc in Computer Science, May 2022.
  - Thesis title: "Robustness And Stability Analyses Of Ensemble Learning Models In Android Malware Detection".
- **[Completed]** Nouf Alturayeif, Msc in Computer Science, Dec 2021.
  - Thesis title: "Aspect-Based Sentiment Analysis of Apps Reviews Using Supervised Machine Learning".
- **[Completed]** Kazi Ekramul Hoque, Msc in Computer Science, Dec 2021.
  - Thesis title: "Hyperparameter Tuning Impact on Machine Learning Forecasting Performance within the Saudi Stock Market".
- **[Completed]** Ahmed Alshaaby, Msc in Software Engineering, Dec 2019.
  - Thesis title: "Software Bad Smells Prediction Using Advanced Machine Learning Techniques".

Awards and Honors

- Recipient of the **Research Excellence Award for Journal Publications**, awarded by the Interdisciplinary Research Center for Finance and Digital Economy (IRC-FDE), King Fahd University of Petroleum and Minerals (KFUPM), 2025.
- Recipient of the **Distinction Award for Excellence in Academic Advising**, King Fahd University of Petroleum and Minerals (KFUPM), 2025.
- Supervised the team awarded the **Best Software Engineering Senior Design Project Award** for the project "Qulab" at the Senior Design Project (SDP) Expo, King Fahd University of Petroleum and Minerals (KFUPM), 2023. *Role: Supervisor*
- Led the KFUPM delegation that achieved **Second Place among 51 teams** at the Gulf Programming Competition, Muscat, Oman, 2022. *Role: Delegation Head*
- Received the **National Cybersecurity Authority (NCA) Education Alignment Certificate** for the Cybersecurity Master's programs at KFUPM, 2022. *Role: Chairman*
- Successfully led the **ABET re-accreditation** process for the Bachelor of Science program in Computer Science, KFUPM, 2021. *Role: Chairman*
- Successfully led the **ABET re-accreditation** process for the Bachelor of Science program in Software Engineering, KFUPM, 2021. *Role: Chairman*
- Recipient of the **University Service Award** in recognition of ten years of service at King Fahd University of Petroleum and Minerals (KFUPM), 2016.
- Awarded multiple **University of Ottawa Travel Grants** to support research collaboration and conference participation, including: École Polytechnique de Montréal, Canada (2010–2012); CSER Conference, Victoria, Canada (2012); MODELSWARD Conference, Lisbon, Portugal (2014).
- Recipient of multiple **Saudi Arabian Cultural Bureau (SACB) Excellence Awards**: Fall 2012, Winter 2014, Winter 2015, and Fall 2015.
- Awarded a fully funded **PhD Scholarship** by the Ministry of Higher Education, Saudi Arabia, 2010.
- Recipient of the **Saudi Telecom Company (STC) Distinguished Graduate Award** for ranking among the top ten graduating students at King Fahd University of Petroleum and Minerals (KFUPM), 2008.

- Recipient of the **Outstanding Graduate Academic Performance Award**, King Fahd University of Petroleum and Minerals (KFUPM), 2008.
- Graduated with **Second Class Honors** from King Saud University, 2006.

Professional Service and Leadership

- **Panel Moderator** – "Shaping the Future: AI Role in Transforming Digital Economies," Saudi Conference on Information Systems (SaudiCIS 2024), King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia, November 2024.
- **Local Organizer and Student Volunteer** – ACM/IEEE 18th International Conference on Model Driven Engineering Languages and Systems (MODELS 2015).
- **President** – Saudi Students Association, University of Ottawa, Canada, 2012.
- **Member** – Saudi Club in Ottawa, Canada (2010–2013). Contributed to organizing cultural, social, and sports activities, including community soccer tournaments.

Research Interests

- AI for Software Engineering
- Software Quality
- Ensemble Learning
- Time series analysis

Languages

Arabic: Mothertongue
English: Fluent