Ali F. Al-Ramadan

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EDUCATION

Ph.D.	Computer Science	Kent State University	Aug 2022 – May 2027 (expected)
M.S.	Computer Science	Kent State University	Aug 2022 – May 2024
B.S.	Computer Engineering	Yarmouk University	Sep 2017 – Jul 2022
Exchange	Erasmus+ Scholarship	Muğla Sıtkı Koçman University	Fall 2019

ACADEMIC EXPERIENCE

Graduate Research Assistant **May 2024 – Present**
Department of Computer Science, Kent State University *Kent, Ohio*
- Lead research on AI-assisted program analysis and transformation with srcML. Design hybrid pipelines that combine deterministic static analysis with large language models to analyze and transform source code at scale.

Graduate Teaching Assistant **Aug 2022 – May 2024**
Department of Computer Science, Kent State University *Kent, Ohio*
- Taught weekly lab sections for 200+ students across three undergraduate programming courses on advanced C++, data structures, memory checking with Valgrind, builds with CMake, and unit testing.

English Teacher **Apr 2022 – Jul 2022**
Abwaab *Remote*
- Conducted interactive online English lessons for middle and high school students. Provided constructive feedback to improve their English skills.

INDUSTRY EXPERIENCE

Research Collaborator **Nov 2026 – Present**
Cincinnatus LLC (via Mercor) *Remote*
- Work on ML performance engineering and MLOps for a leading AI research lab as part of its extended workforce.

Mercor (Contract) **Jul 2026 – Sep 2026**
CUDA Kernel Engineer *Remote*
- Shipped 50+ CUDA C++ kernels reproducing PyTorch operator semantics (GEMMs, attention projections, encoder layers, reduction chains, elementwise transcendentals). Reached 2x to 18x speedups over the PyTorch baseline.
- Profiled with Nsight Compute to direct each optimization across kernel fusion, shared-memory and halo tiling, tensor-core (WMMA) GEMMs, and warp-level reductions. Verified memory safety with compute-sanitizer.
- Authored 21 grading rubrics used to score other contributors' agent runs on correctness, hardware efficiency, and memory safety.

AI Model Evaluation
- Wrote graduate-level computer science prompts and golden answers from research papers to beat frontier LLMs within a set distribution.
- Ranked frontier model outputs and flagged responses that showed reward hacking.

Lead Software Engineer (Contract) **May 2024 – Aug 2024**
Abdul Hameed Shoman Foundation *Remote*
- Led the development of TransVisio, an LLM-powered speech recognition and subtitling platform for 100+ languages that multiple universities adopted for student instruction.

Lead Software Engineer (Contract) **Jan 2024 – May 2024**
The Arabic Observatory of Translation *Remote*
- Led the development of SubGPT, an LLM-powered SRT subtitle translator that reached over 90% semantic accuracy against a token-matching baseline.

IT Infrastructure Intern **Mar 2022 – Jul 2022**
Specialized Technical Services (STS) *Amman, Jordan*
- Improved Oracle, IBM, and Dell EMC server throughput 15% through load-balancing changes; automated provisioning of 50+ VMware virtual machines.

RESEARCH INTERESTS

AI for software engineering with a focus on combining static program analysis and program transformation with large language models to support the maintenance and evolution of large-scale software.

Advisor: Prof. Jonathan I. Maletic, M.S. and Ph.D. (May 2023 – Present)

PUBLICATIONS AND SCHOLARLY WORK

Refereed Publications

1. Decker, M.J., **Al-Ramadan, A.F.**, Borketey, H.B., Symonds, A.M., Collard, M.L., Maletic, J.I., (2026) "srcDiff: A Programmer-Centric Syntactic Differencing Tool", in the Proceedings of the 42nd IEEE International Conference on Software Maintenance and Evolution (ICSME), Tool Demonstration and Data Showcase Track, Benevento, Italy, September 14–18, pp. 737–741, 5 pages, DOI: 10.1109/ICSME67971.2026.00077.
2. Sipahioglu, J.A., Behler, J.A.C., Testa, S., **Al-Ramadan, A.F.**, Decker, M.J., Collard, M.L., Maletic, J.I., (2026) "nameCollector: Extracting Source Code Identifiers Along with their Types and Context", in the Proceedings of the 42nd IEEE International Conference on Software Maintenance and Evolution (ICSME), Tool Demonstration and Data Showcase Track, Benevento, Italy, September 14–18, pp. 765–769, 5 pages, DOI: 10.1109/ICSME67971.2026.00082.
3. Behler, J.A.C., **Al-Ramadan, A.F.**, Baheri, B., Collard, M.L., Guan, Q., Maletic, J.I., (2025) "Static Analysis and Transformation for Quantum Programming Languages", in *IEEE Software*, vol. 42, no. 5, pp. 58–64, September–October 2025, DOI: 10.1109/MS.2025.3566634.
4. **Al-Ramadan, A.F.**, Behler, J.A.C., Decker, M.J., Dragan, N., Collard, M.L., Maletic, J.I., (2024) "Stereocode: A Tool for Automatic Identification of Method and Class Stereotypes for Software Systems", in the Proceedings of the 40th IEEE International Conference on Software Maintenance and Evolution (ICSME), Tool Demonstrations Track, Flagstaff, Arizona, United States, October 6–11, pp. 898–902, 5 pages, DOI: 10.1109/ICSME58944.2024.00099.
5. Behler, J.A.C., **Al-Ramadan, A.F.**, Baheri, B., Guan, Q., Maletic, J.I., (2024) "Supporting Static Program Analysis and Transformation of Quantum-Based Languages", in the Proceedings of the 5th IEEE International Conference on Quantum Computing and Engineering (QCE), New Ideas and Emerging Results Track, Montréal, Québec, Canada, September 15–20, pp. 836–842, 7 pages, DOI: 10.1109/QCE60285.2024.00103.
6. Carl, M., Lu, S., **Al-Ramadan, A.F.**, (2024) "Using Machine Learning to Validate a Novel Taxonomy of Phenomenal Translation States", in the Proceedings of the 25th Annual Conference of the European Association for Machine Translation (EAMT), Sheffield, United Kingdom, June 2024, pp. 480–491, 12 pages, aclanthology.org/2024.eamt-1.40.
7. Abu-Rayyash, H., **Al-Ramadan, A.F.**, (2024) "SubGPT: An Automated Tool for Subtitle-Template Translation", in the *International Journal of Linguistics, Literature and Translation*, vol. 7, no. 6, pp. 126–134, June 2024, 9 pages, DOI: 10.32996/ijllt.2024.7.6.14.

Theses

1. **Al-Ramadan, A.F.**, "An Empirical Investigation of Method and Class Stereotype Distributions Across Software Systems in C++, C#, and Java", M.S. Thesis, Kent State University, Department of Computer Science, May 2024.

Conference Presentations

- "Stereocode: A Tool for Automatic Identification of Method and Class Stereotypes for Software Systems", at the 40th IEEE International Conference on Software Maintenance and Evolution (ICSME), Flagstaff, Arizona, United States, October 6–11, 2024.
- "Using Machine Learning to Validate a Novel Taxonomy of Phenomenal Translation States", poster presented online at the 25th Annual Conference of the European Association for Machine Translation (EAMT), Sheffield, United Kingdom, June 2024.
- "Using Static Program Analysis to Automatically Document Source Code Classes and Methods with Stereotypes", at the Kent State Graduate Student Symposium, Kent, Ohio, United States, April 1, 2024.
- "SubGPT: An Automated Subtitle-Template ChatGPT-Powered Tool", at the Translation Across Humanities (TransHum) Graduate Student Celebration Workshop, March 1, 2024.

Scholarly Acknowledgements

- Grabinger, L., Al Madi, N., Bednarik, R., Busjahn, T., Engl, F., Ezer, T., Gruber, H., Hauser, F., Maletic, J.I., Obaidellah, U., Park, K.I., Sharif, B., Sharafi, Z., Shepherd, L., Mottok, J., "A Cookbook for Eye Tracking in Software Engineering", in the Proceedings of the ACM European Conference on Software Engineering Education (ECSEE), Seeon Monastery, Bavaria, Germany, June 2–4, 2025, 17 pages.
- Guarnera, D.T., "SrcGaze: Automated Fixation Error Correction to Support Eye Tracking Studies on Source Code", Ph.D. Dissertation, Kent State University, Department of Computer Science, December 2024.
- Acknowledged for leading the development of TransVisio in Abu-Rayyash, H., Haider, A.S., "Introducing TransVisio: A Customizable AI-Powered Subtitling Tool", in the *Research Journal in Advanced Humanities*, December 2024.

PROJECTS

srcPatch | Python, LangGraph, srcML, srcQL, GLM-5.3, XSLT, Streamlit Ongoing

- Develop an LLM agent that turns a single before-and-after code example into a reviewed patch for a whole C, C++, C#, Java, or Python code base. The patch includes dependent edits, such as the call sites of a method made static.
- Find every instance of a change with srcQL structural queries over srcML, including variants written in other forms. Rewrite each site with templates from the example or with LLM-written XSLT that must reproduce the example before it runs.

nameChecker | C++, Docker, libxml2, CMake, CTest Ongoing

- Develop a C++ linter that flags poor identifier names using compiler-style diagnostics to enforce naming quality without manual review.
- Integrate a caching part-of-speech tagger with user dictionary support to reach 86% classification accuracy.

LaneScope | Python, C++, CUDA, Nsight Compute github.com/aalramadan/LaneScope

- Built an open-source CUDA profiler that shows which GPU threads collide in shared memory and recommends the code change that removes each collision, with a browser GUI and a live demo.

- Found and fixed a shared-memory bottleneck in llama.cpp using LaneScope. The fix was merged as pull request #31803 and made the kernel 4.6% to 6.9% faster on an RTX 5070.
- Validated the profiler against NVIDIA Nsight Compute by matching all 2,710 counts of its test kernels on an RTX 4060 and 2,819 of 2,826 on an RTX 5070.
- Showed that the fixes LaneScope ranks first make its sample matrix multiply 1.72x to 1.77x faster and its matrix transpose 1.13x to 1.19x faster on an RTX 4060.

Statica | Python, LangGraph/LangChain, Gemini, C# github.com/KSU-SDML/Statica

- Built an agentic LangGraph pipeline where specialized nodes gather type, field, and call-site context from a parsed syntax representation of the code. An LLM and a deterministic analysis engine then judge each C# instance method together for static-conversion eligibility.
- Reached 89% agreement with Microsoft's Roslyn compiler without requiring a build toolchain. Implemented a file-scoped cascading dependency resolver that propagates eligibility through call chains to cut analysis from multi-hour manual review to under a minute.

Stereocode | C++, libxml2 (SAX/DOM), CMake, CTest github.com/srcML/stereocode

- Built a high-performance classifier that labels method and class behavior across entire codebases with streaming SAX parsing instead of loading whole documents into memory.
- Ran across 1,050 software systems in C, C++, C#, and Java totaling millions of lines; part of the srcML infrastructure.

PeerCheck | Python, PyTorch, NLP, Multi-task Learning github.com/aalramadan/PeerCheck

- Built a multi-task PyTorch detector for AI-generated peer reviews that shares representations across related classification objectives to reach 90%+ F1.
- Deployed with human-in-the-loop escalation as compliance infrastructure for IEEE ICSME 2026 to screen 500+ submitted reviews before committee discussion.

TransVisio | Python, PySide, GPT/Gemini github.com/aalramadan/TransVisio

- Built an LLM-powered speech recognition and subtitling platform covering 100+ languages. Owned the full-stack design from model integration through REST API deployment.
- Adopted by multiple universities for student instruction; funded by a research grant and acknowledged in a peer-reviewed publication.

SubGPT | Python, PySide, GPT github.com/aalramadan/SubGPT

- Engineered an SRT subtitle translator that aligns source segments to template segments with text-embedding-ada-002 instead of token matching.
- Reached over 90% semantic accuracy against the naive token-matching baseline; published in the International Journal of Linguistics, Literature and Translation.

AWARDS, HONORS, AND RECOGNITIONS

- **Certificate of Appreciation** – Awarded by the General Chair in recognition of outstanding service as Review Compliance Chair for the 42nd IEEE International Conference on Software Maintenance and Evolution (ICSME 2026), Benevento, Italy. September 2026.
- **Reviewer Certificate** – Awarded in recognition of efforts as a peer reviewer for IEEE Transactions on Software Engineering. Spring 2026.
- **Distinguished Reviewer** – Awarded in recognition of outstanding reviews and insightful discussions in the ICSE 2026 Shadow Program Committee (Shadow PC). Fall 2025.
- **Platinum Teaching Recognition** – Awarded for leadership in teaching through the project "Transforming Teaching Through Interdisciplinary Collaboration: Tool Design and Implementation in Practice". Spring 2025.
- **Yarmouk University Top Class Recognition** – Awarded for ranking 1st in the class. Fall 2022.
- **Yarmouk University Honors List** – Awarded for academic excellence in 7 semesters. Feb 2018 – Feb 2022.

FUNDING AND SUPPORT

- **National Science Foundation (NSF) Student Travel Award** – $890 for travel to the 2024 IEEE International Conference on Software Maintenance and Evolution (ICSME) to present "Stereocode: A Tool for Automatic Identification of Method and Class Stereotypes for Software Systems". Fall 2024.
- **Kent State University Graduate Student Senate (GSS) Domestic Travel Award** – $300 for travel to the 2024 IEEE International Conference on Software Maintenance and Evolution (ICSME). Fall 2024.
- **Abdul Hameed Shoman Foundation Research Grant** – $3,400 for leading the development of the TransVisio tool. Summer 2024.
- **Kent State University Graduate Student Symposium Outstanding Presentation Award** – $500 for the best poster presentation, "Using Static Program Analysis to Automatically Document Source Code Classes and Methods with Stereotypes". Spring 2024.
- **The Arabic Observatory of Translation (AOT) Research Grant** – $9,800 for leading the development of the SubGPT tool. Spring 2024.
- **Yarmouk University Erasmus+ Scholarship** – $3,600 to study at Muğla Sıtkı Koçman University, Muğla, Turkey. Fall 2019.

TEACHING

Undergraduate Teaching, Kent State University

CS 33901 – Software Engineering · Invited Guest Lecturer
CS 23001 – CS II: Data Structures & Abstraction · Lab Instructor — Fall 2023, Spring 2024
CS 13012 – CS IB: Object Oriented Programming · Lab Instructor — Fall 2022, Spring 2023
CS 13011 – CS IA: Procedural Programming · Lab Instructor — Fall 2022, Spring 2023

Outreach

Future Flashes – Software Development: Research, Education, & Industry · Guest Lecturer — Spring 2025

PROFESSIONAL SERVICE

Organizer and Committee Member

- **Program Committee Member**, IEEE/ACM International Conference on Software Engineering (ICSE 2027).
- **Review Compliance Chair**, Organizing Committee, IEEE International Conference on Software Maintenance and Evolution (ICSME 2026). Built automated tools to check submitted papers for formatting issues and peer reviews for AI-generated content. Managed these workflows to maintain fairness, transparency, and academic integrity across the conference.
- **Shadow Program Committee Member**, IEEE/ACM International Conference on Software Engineering (ICSE 2026). Participated in formal training on the peer-review process and engaged in consensus-building discussions to evaluate acceptances.
- **Co-Organizer**, "Technical Briefing on srcML & srcDiff: Infrastructure to Support Exploring, Analyzing, and Differencing of Source Code" at the 40th IEEE International Conference on Software Maintenance and Evolution (ICSME), Flagstaff, Arizona, United States, October 9, 2024 (90 minutes).

Journal Reviewer (Main Reviewer)

- 2026 IEEE Transactions on Software Engineering (TSE) – 2 papers
- 2025 IEEE Transactions on Software Engineering (TSE) – 6 papers
- 2025 ACM Transactions on Computing Education (TOCE) – 2 papers

Conference Reviewer (Main Reviewer)

- 2027 IEEE/ACM International Conference on Software Engineering (ICSE) – 15 papers
- 2026 IEEE International Conference on Software Maintenance and Evolution (ICSME) – 5 papers

Conference Reviewer (External/Additional Reviewer)

- 2027 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER) – 3 papers
- 2026 IEEE Working Conference on Software Visualization (VISSOFT) – 2 papers
- 2026 IEEE/ACM International Conference on Program Comprehension (ICPC) – 2 papers
- 2026 IEEE/ACM International Conference on Software Engineering (ICSE) – 6 papers
- 2025 IEEE/ACM International Conference on Program Comprehension (ICPC) – 3 papers
- 2025 IEEE International Conference on Software Maintenance and Evolution (ICSME) – 3 papers
- 2025 ACM International Conference on the Foundations of Software Engineering (FSE) – 3 papers
- 2025 ACM European Conference on Software Engineering Education (ECSEE) – 1 paper
- 2024 IEEE/ACM International Conference on Program Comprehension (ICPC) – 2 papers
- 2024 IEEE International Conference on Software Maintenance and Evolution (ICSME) – 3 papers
- 2024 ACM International Conference on the Foundations of Software Engineering (FSE) – 2 papers
- 2023 IEEE International Conference on Software Maintenance and Evolution (ICSME) – 3 papers

UNIVERSITY ACTIVITIES AND SERVICE

- **Judge** – HAkrathon 2026, The University of Akron. Evaluated the projects of 2 student teams with 9 participants and awarded non-cash prizes. November 6, 2026.
- **Judge** – Choose Ohio First Conference 2026, Cleveland State University. Evaluated research posters for 6 undergraduate teams and highlighted strengths and areas for improvement. April 19, 2026.
- **Judge** – Kent Hack Enough 2026, Kent State University. Participated in evaluating final projects for 159 participants and awarded 17 non-cash prizes. March 28–29, 2026.
- **Judge** – Choose Ohio First Conference 2025, Kent State University. Evaluated research posters for 8 undergraduate teams and highlighted strengths and areas for improvement. April 13, 2025.
- **Judge** – Kent Hack Enough 2025, Kent State University. Participated in evaluating final projects for 88 participants and awarded $1,836 in prizes. February 15–16, 2025.
- **Judge** – Kent Hack Enough 2024, Kent State University. Participated in evaluating final projects for 62 participants and awarded $1,150 in prizes. April 20–21, 2024.
- **Judge** – Choose Ohio First Conference 2024, Case Western Reserve University. Judged research presentations for 5 undergraduate teams and highlighted strengths and areas for improvement. April 8, 2024.
- **Judge** – Choose Ohio First Conference 2023, Youngstown State University. Judged research posters for 10 undergraduate teams and highlighted strengths and areas for improvement. April 15, 2023.