FEROSH JACOB

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SUMMARY

Software leader with 22 years of experience across the full software development lifecycle, including 12 years driving AI-powered search, catalog, and data-driven solutions. I have led cross-functional teams of 40+ engineers and data scientists, delivering high-impact technology initiatives. Experienced in search relevance and platform performance, machine learningdriven features, and large-scale system migrations. Skilled in product ranking, search evaluation, ontology development, and AI-driven solutions for entity recognition, normalization, and catalog/search discovery. Also led the development of agent-based chatbots and generative AI applications to solve complex business problems.

EDUCATION

Doctor of Philosophy   *2009-2013*
Department of Computer Science, University of Alabama, Tuscaloosa, AL
Advisor: Dr. Jeff Gray
Thesis: *Modeling Computation Intensive Problems for Heterogeneous Computing and Improved Source Code Maintenance*

Master of Science   *2007-2009*
Department of Computer Science, Clarkson University, Potsdam, NY
Advisor: Dr. Daqing Hou
Thesis: *CSeR - A Code Editor for Tracking & Visualizing Detailed Clone Differences*

Bachelor of Technology   *2000-2004*
Department of Electronics and Communication, National Institute of Technology, Calicut, India

TEACHING EXPERIENCE

Assistant Professor (part-time)   *May 2017 - Present*
Kennesaw State University, Kennesaw, GA

Teaching Assistant (Grader)   *January 2010 - April 2010*
University of Alabama at Birmingham, Birmingham, AL

Teaching Assistant (Instructor)   *Aug 2008 - May 2009*
Clarkson University, Potsdam, NY

TEACHING RELATED WORKSHOPS/CONFERENCES ATTENDED

Online Course Development workshop   *January 2018*
Center for Excellence in Teaching & Learning, Kennesaw State University

Gateway Course Experience Conference in Atlanta   *March 2019*
Atlanta, GA

The Symposium for Part-time, Adjunct, and Contingent Educators   *June 2019*
KSU Center Kennesaw State University, Kennesaw, GA

Senior Engineering Manager   *Jul 2024 - Present*
Genuine Parts Company(GPC), Atlanta, GA

At GPC, I led multiple AI-driven initiatives, including developing a first-of-its-kind agent-based auto parts chat-bot using Agent Development Kit, collaborating with UX and platform teams to drive AB testing and production rollout. I also led a cross-functional team of four squads to solve catalog and search/discovery challenges using generative AI and classical machine learning approaches.

Senior Engineering Manager   *Jan 2021 - Jun 2024*
Kaiser Permanente, Atlanta, GA

At Kaiser Permanente, I led a cross-functional team that included managers, data scientists, ML engineers, and software engineersresponsible for the relevance of search and platform performance for internal and external clients. I also directed the migration of WEX to a homegrown open-source search solution, successfully transitioning KP.org endpoints with minimal disruption to other services.

Staff Software Engineer   *Sep 2015 - Jan 2021*
The Home Depot, Smyrna, GA

At Home Depot, I led multiple data-driven initiatives to improve search relevance, product ranking, and ontology development for the online website. My work involved building machine learningbased ranking models, developing a search evaluation framework to measure feature impact prior to deployment, and creating a product ontology to improve search precision and recall using customer behavior and external datasets.

Senior Software Engineer   *Sep 2013 - Sep 2015*
Careerbuilder, Norcross, GA

At CareerBuilder, I led the development of a machine learningbased school/company normalization system that identifies and standardizes educational/other institutions from unstructured text. I also contributed as an engineer to the Recruitment Edge project, developing algorithms to merge and match candidate profiles across multiple data sources using advanced instance-matching techniques

Graduate Research Assistant   *June 2010 - May 2013*
Department of Computer Science, University of Alabama, Tuscaloosa, AL

I identified, analyzed, and developed three modeling approachescode-level, program-level, and domain-levelfor computation-intensive problems to enhance portability, improve source code maintainability, and leverage heterogeneous computing. I also collaborated with researchers in cloud computing to evaluate the performance of these problems in cloud environments. This work was supported by an Air Force/AFRL STTR grant, which I helped my advisor, Dr. Jeff Gray, prepare and submit.

Ph.D. Intern   *May 2012 - Aug 2012*
Pacific Northwest National Laboratory, Richland, WA

During this three-month internship, I designed and developed two Domain-Specific Languages (DSLs) that enabled scientists to describe and deploy signature discovery workflows. At the end of the internship, we successfully integrated these DSLs into a commonly used pipeline, significantly improving scientists productivity.

On Campus Ambassador   *Oct 2007 - May 2008*
Sun MicroSystems, Clarkson University, Potsdam, NY

I worked as a technology evangelist for Sun (now Oracle) technologies at Clarkson University. My responsibilities included creating and supporting campus user groups, organizing seminars, and promoting the latest tools and technological innovations from Sun Microsystems.

Software Engineer   *Jun 2004 - Jul 2007*
Stabilix Private Solutions Ltd, Trivandrum, India

I worked from India supporting a U.S. insurance company named Celtic, while simultaneously contributing to the development of a product called Health Companion. For the Health Companion project, I focused on the security module of a generic application and claim-processing system designed for insurance companies.

TUTORIALS

Hamid Hassanzadeh, Priyanka Goyal, **Ferosh Jacob**, Mitchell Bowden, Pramod Salian, and Ravi Sambhu, Deep Learning with Python: from Theory to Application, in *Proceedings of the 57th Southeast Regional Conference*, Kennesaw, GA, March 2019, (in press).

REFEREED BOOK CHAPTERS

Faizan Javed and **Ferosh Jacob**, Data Science and Big Data Analytics at Career Builder, *Big-Data Analytics and Cloud Computing: Theory, Algorithms and Applications(Marcello Trovati, Richard Hill, Ashiq Anjum, Ying Shao Zhu, and Lu Liueds.)*, Springer International Publishing, ISBN: 978-3-319-25313-8, 2016, pp. 83-96.

REFEREED JOURNAL ARTICLES

Ferosh Jacob, Adam Wynne, Yan Liu, Nathan Baker, and Jeff Gray, Domain-Specific Languages For Developing and Deploying Signature Discovery Workflows, *IEEE Computing in Science and Engineering*, vol. 16, no. 1, 2014, pp. 52-64.

Weihua Geng and **Ferosh Jacob**, A GPU Accelerated Direct-sum Boundary Integral Poisson Boltzmann Solver, *Computer Physics Communications*, vol. 184, no. 6, 2013, pp. 1490-1496.

Ferosh Jacob, Jeff Gray, Jeffrey C. Carver, Marjan Mernik, and Purushotham Bangalore, "PPModel: A Modeling Tool for Source Code Maintenance and Optimization of Parallel Programs," *The Journal of Supercomputing*, vol. 62, no 3, 2012, pp. 1560-1582.

Ferosh Jacob, Sonqging Yue, Jeff Gray, and Nicholas Kraft, "SRLF: A Simple Refactoring Language for High Performance FORTRAN," *Journal of Convergence Information Technology*, vol. 7, no. 12, 2012, pp. 256-263.

Ferosh Jacob, Amber Wagner, Prateek Bahri, Susan Vrbsky, and Jeff Gray, "Simplifying the Development and Deployment of MapReduce Algorithms," *International Journal of Next-Generation Computing* (Special Issue on Cloud Computing Yugyung Lee and Praveen Rao, eds.), vol. 2, no. 2, 2011, pp. 123-142.

Ferosh Jacob, Ashfakul Islam, Weihua Geng, Jeff Gray, Brandon Dixon, Susan Vrbsky, and Purushotham Bangalore, "PNBsolver: A Case Study on Modeling Parallel N-body Programs," *Journal of Parallel and Distributed Computing*, 26 pages (in submission).

REFEREED CONFERENCE PUBLICATIONS

Yizhao Ni, **Ferosh Jacob**, Priya Gopi Achuthan, Hui Wu, and Faizan Javed, Automated Evaluation of the Search Relevance Capability for Kp.org in *Proceedings of AMIA Annual Symposium*, Washington, DC, November 2022.

Yizhao Ni, **Ferosh Jacob**, Priya Gopi Achuthan, Hui Wu, and Faizan Javed, Leveraging Automated Search Relevance Evaluation to Improve System Deployment: A Case Study in Healthcare in *Proceedings of the International Conference on Information and Knowledge Management*, Atlanta, GA, October 2022.

Ferosh Jacob, Ilamgumaran Karunanithi, Pramod Salian, and Ravi Sambhu, BBC: A DSL for Designing Cloud-based Heterogeneous Bigdata Pipelines *Proceedings of the International Conference on Big Data*, Boston, MA, December 2017.

Mayank Kejriwal, Qiaoling Liu, **Ferosh Jacob**, and Faizan Javed, A Pipeline for Extracting and Deduplicating Domain-Specific Knowledge Bases in *Proceedings of the International Conference on Big Data*, Santa Clara, CA, November 2015, pp. 1144-1153.

Qinlong Luo, Meng Zhao, Faizan Javed, and **Ferosh Jacob**, Macau: Large-Scale Skill Sense Disambiguation in the Online Recruitment Domain in *Proceedings of the International Conference on Big Data*, Santa Clara, CA, November 2015, pp. 1324-1329.

Ferosh Jacob, Aaron Johnson, Faizan Javed, Meng Zhao, and Matt McNair, WebScalding: A Framework for Big Data Web Services in *Proceedings of the International Conference of Big Data Computing Service and Applications*, San Francisco Bay, CA, April 2015, pp. 493-498.

Faizan Javed, Qinlong Luo, Matt McNair, **Ferosh Jacob**, Meng Zhao, Tae Seung Kang, Carotene: A Job Title Classification System for the Online Recruitment Domain in *Proceedings of the International Conference of Big Data Computing Service and Applications*, San Francisco Bay, CA, April 2015, pp. 286-293.

Meng Zhao, Faizan Javed, **Ferosh Jacob**, and Matt Mcnair, SKILL: A System for Skill Identification and Normalization in *Proceedings of the Association for the Advancement of Artificial Intelligence (Industry track)*, Austin, TX, January 2015, pp. 4012-4017.

Ferosh Jacob, Faizan Javed, Meng Zhao, and Matt Mcnair, sCooL: A System for Academic Institution Name Normalization in *Proceedings of the Second International Symposium on Big Data and Data Analytics*, Minneapolis, MN, May 2014, pp. 86-93.

Ferosh Jacob, Yu Sun, Jeff Gray, and Purushotham Bangalore, "A platform-independent tool for modeling parallel programs," in *Proceedings of the 49th Southeast Regional Conference*, Kennesaw, GA, March 2011, pp. 138-143.

Ferosh Jacob, David Whittaker, Sagar Thapaliya, Purushotham Bangalore, Marjan Mernik, and Jeff Gray, "CUDACL: A tool for CUDA and OpenCL programmers," in *Proceedings of the 17th International Conference on High Performance Computing*, Goa, India, December 2010, pp. 1-11.

Ferosh Jacob, Ritu Arora, Purushotham Bangalore, Marjan Mernik, and Jeff Gray, "Raising the level of abstraction of GPU-programming," in *Proceedings of the 16th International Conference on Parallel and Distributed Processing*, Las Vegas, NV, July 2010, pp. 339-345.

Ferosh Jacob and Robert Tairas, "Template inference using language models," in *Proceedings of the 48th Southeast Regional Conference*, Oxford, MS, April 2010, pp. 104-109.

Daqing Hou, **Ferosh Jacob**, and Patricia Jablonski, "Exploring the design space of proactive tool support for copy-and-paste programming," in *Proceedings of the 19th International Conference of Center for Advanced Studies on Collaborative Research*, Ontario, Canada, November 2009, pp. 188-202.

Daqing Hou, **Ferosh Jacob**, and Patricia Jablonski, "Proactively managing copy-and-paste induced code clones," in *Proceedings of the 25th International Conference on Software Maintenance*, Alberta, Canada, September 2009, pp. 391-392.

Daqing Hou, **Ferosh Jacob**, and Patricia Jablonski, "CnP: Towards an environment for the proactive management of copy-and-paste programming," in *Proceedings of the 17th International Conference on Program Comprehension*, British Columbia, Canada, May 2009, pp. 238-242.

REFEREED WORKSHOP PUBLICATIONS

Ferosh Jacob, Adam Wynne, Yan Liu, Nathan Baker, and Jeff Gray, "Domain-specific languages for composing signature discovery Workflows," in *Proceeding of the 12th Workshop on Domain-Specific Modeling*, Tucson, AZ, October 2012, pp. 61-64.

Robert Tairas, **Ferosh Jacob**, and Jeff Gray, "Representing clones in a localized manner," in *Proceedings of the 5th International Workshop on Software Clones*, Honolulu, Hawai, May 2011, pp. 54-60.

Ferosh Jacob, Jeff Gray, Purushotham Bangalore, and Marjan Mernik, "Refining high performance FORTRAN code from programming model dependencies," in *Proceedings of the 17th International Conference on High Performance Computing Student Research Symposium*, Goa, India, December 2010, pp. 1-5.

Ferosh Jacob, Daqing Hou, and Patricia Jablonski, "Actively comparing clones inside the code editor," in *Proceedings of the 4th International Workshop on Software Clones*, Cape Town, South Africa, May 2010, pp. 9-16.

PRESENTATIONS AND INVITED TALKS

"ChatGPT and Search" *NSF REU SITE: Non-Invasive Deep Brain-Computed Interfaces,*, Kennesaw University (Marietta campus), GA, June 2023.

"Leveraging Automated Search Relevance Evaluation to Improve System Deployment: A Case Study in Healthcare" *International Conference on Information and Knowledge Management*, Atlanta, GA, October 2022.

"Full time Software Engineer Part-time Computer Science Instructor' *The Symposium for Part-time, Adjunct, and Contingent Educators* , Kennesaw, GA, June 2019.

"Semantic Search Using Ontology and Knowledge base" *Walton High School*, Marietta, GA, March 2019.

"BBC: A DSL for Designing Cloud-based Heterogeneous Bigdata Pipelines" *International Conference on Big Data*, Boston, MA, December 2017.

"Developing an Ontology for the Home Improvement/Retail Domain" *ACM Southeast conference*, Kennesaw, GA, April 2017.

"Machine learning techniques in Java" *Atlanta Java Users Group meetup*, Atlanta, GA, May 2016.

"Modulo-X: A Simple Transformation Language for HPC Programs" *Southeast Regional Conference*, Tuscaloosa, AL, March 2012 (Poster).

"CUDACL+: A Framework for GPU Programs," *International Conference on Object-Oriented Programming, Systems, Languages, and Applications (SPLASH/OOPSLA)*, Portland, OR, October 2011 (Doctoral Symposium).

"Refining high performance FORTRAN code from programming model dependencies" *International Conference on High Performance Computing Student Research Symposium*, Goa, India, December 2010 (Poster). **Best Presentation Award**

"Extending abstract APIs to shared memory," *International Conference on Object-Oriented Programming, Systems, Languages, and Applications (SPLASH/OOPSLA)*, Reno, NV, October 2010 (Student Research Competition). **Bronze Medal**

"CSeR: A code editor for tracking and highlighting detailed clone differences," *International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) Refactoring Workshop*, Orlando, FL, October 2009 (Poster).

- CS 7263 Informational Retrieval, Kennesaw State University, 2025 Fall (Online)

- CS 7265 Bigdata Analytics, Kennesaw State University, 2025 Spring (Online)

- CS 7263 Informational Retrieval, Kennesaw State University, 2024 Fall (Online)

- CS 7050 Data Warehousing and Mining, Kennesaw State University, 2024 Summer (Online)

- CS 4306 Algorithm Analysis, Kennesaw State University, 2024 Spring (Online)

- CS 7263 Informational Retrieval, Kennesaw State University, 2023 Fall (Online)

- SWE 6633 Software Project Plan & Management, Kennesaw State University, 2023 Summer (Online and In-Class)

- SWE 6813 Web Service Engineering, Kennesaw State University, 2023 Spring (Online and In-Class)

- SWE 6613 Requirements Engineering, Kennesaw State University, 2022 Fall (Online and In-Class)

- SWE 6673 Software Testing & Verification, Kennesaw State University, 2022 Spring (Online and In-Class)

- SWE 6763 Software Evaluation & Measurement, Kennesaw State University, 2021 Fall (Online and In-Class)

- SWE 4663 Software Project Management, Kennesaw State University, 2021 Spring (In-Class)

- CS 7263 Text Mining, Kennesaw State University, 2019 Spring (Online and In-Class)

- CS 6045 Advanced Algorithms, Kennesaw State University, 2018 Fall (Online and In-Class)

- CS 4242 Artificial Intelligence, Kennesaw State University, 2018 Summer (Online)

- CS 7263 Text Mining, Kennesaw State University, 2018 Spring (Online and In-Class)

- CS 1301 Programming Principles I, Kennesaw State University, 2017 Fall (In-Class)

- CS 6021 Advanced Computer Architecture, Kennesaw State University, 2017 Summer (Online and In-Class)

- MA 131 Calculus I, Clarkson University, Fall 2008 (Teaching assistant, In-Class)

- MA 132 Calculus II, Clarkson University, Spring 2009 (Teaching assistant, In-Class)