

Jason L Causey Curriculum Vitae

Department of Computer Science
Arkansas State University
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Professional Preparation:

Jan. 2016 – Dec. 2017 — University of Arkansas at Little Rock — Little Rock, AR

PhD, Bioinformatics Advisor: Xiuzhen Huang, PhD

Dissertation: “*Studying Low Complexity Structures In Bioinformatics Data Analysis Of Biological And Biomedical Data.*”

Aug. 2001 – May 2003 — Arkansas State University — Jonesboro, AR

MS, Computer Science Graduate GPA: 4.0

Aug. 1998 – May 2001 — Arkansas State University — Jonesboro, AR

BS, Computer Science Graduated Cum Laude

Appointments:

Aug. 2018 - Present — Arkansas State University — Jonesboro, AR

Assistant Professor, Dept. of Computer Science

Teaching interests: Core programming curriculum, data science, machine learning and cross-disciplinary ML applications.
Research interests: Biomedical Imaging, Radiomics, Bioinformatics, machine learning, and secure/robust data sharing technology.

Aug. 2003 - Aug. 2018 — Arkansas State University — Jonesboro, AR

Instructor in Computer Science

Teaching primarily in the core programming competency area (including Structured Programming, Object-Oriented Programming, Data Structures, Operating Systems), including curriculum updates and preparation for each of these courses. Co-developed the Accelerated Programming remediation series (graduate level). Developed a new course: Web Application Development, which is now in regular rotation.

Aug. 2002 – May 2003 — Arkansas State University — Jonesboro, AR

Graduate Teaching Assistant (Computer Science)

Aug. 2001 – May 2002 — Arkansas State University — Jonesboro, AR

Graduate Teaching Assistant (Math)

Service and Synergistic Activities:

Serves as Associate Director of the Arkansas State University / St. Bernards Translational Research Lab. (2019 - present)

Serves as Lab Manager of the Bioinformatics Lab at Arkansas Biosciences Institute (ABI) at Arkansas State University. (2017 - present)

Creator and host of a weekly presentation and discussion forum “Code Friday” where students meet to present personal projects and discuss computer science and general technological topics in a positive, encouraging environment. (2014 - present)

Faculty Sponsor, Association for Computing Machinery student organization, Arkansas State University chapter. (2016 – present)

College of Engineering & Computer Science Curriculum Committee. (2019 - present)

Co-develops and instructs Graduate Assistant training workshops. (2016 - present)

Grants:

2018 - 2020 “Develop Novel Informatics Algorithms for Lung Cancer Early Screening with CT Scans”, Arkansas Biosciences Institute, #200144

Publications:

J. L. Causey, C. Ashby, K. Walker, Z. P. Wang, M. Yang, Y. Guan, J. H. Moore, X. Huang, “DNAP: A Pipeline for DNA-seq Data Analysis” *Scientific Reports — Nature Publishing Group*, **8** 6793 (2018).

DOI: 10.1038/s41598-018-25022-6

J. L. Causey*, J. Zhang*, S. Ma, B. Jiang, J. A. Qualls, D. G. Politte, F. Prior, S. Zhang, X. Huang, “Highly accurate model for prediction of lung nodule malignancy with CT scans” *Scientific Reports — Nature Publishing Group*, **8** 9286 (2018).

DOI: 10.1038/s41598-018-27569-w

* Co-First authors.

B. Jiang*, S. Ma*, J. Causey*, L. Qiao, M. P. Hardin, I. Bitts, D. Johnson, S. Zhang, X. Huang, “SparRec: An effective matrix completion framework of missing data imputation for GWAS.” *Scientific Reports — Nature Publishing Group*, **6** 35534 (2016).

DOI: 10.1038/srep35534 URL: <https://www.nature.com/articles/srep35534>

* Co-First authors.

T. Osborn, S. Kaimal, J. Causey, W. Burns, S. Reeve, “Optical detection of explosives: spectral signatures for the explosive bouquet” *Proceedings of SPIE*, **7304** 730419-730419-8 (2009).

DOI: 10.1117/12.818794

Other Research Activities:

2018-ongoing — Arkansas State University and St. Bernard’s Translational Research Group

Arkansas State University

Research in the area of biomedical informatics with a focus on improving diagnosis, treatment, and patient care.

2010-2012 — SHADES Research group

Arkansas State University

Researching machine learning techniques, data visualization, interfaces, and high-performance computing for the SHADES project.

2008-2009 — Laser Spectroscopy Group
Arkansas State University

Developed software used for calibrating spectra generated by high-resolution infrared laser spectrometry.

Research Interests:

Biomedical Imaging Analysis: I have published techniques for leveraging advanced machine learning and “deep learning” algorithms for extracting diagnostically relevant features from biomedical images and developing models capable of incorporating features derived from images with genomic, clinical, or demographic information. My participation in the 2016 Data Science Bowl (a lung cancer detection challenge) fostered new collaborations. I lead a team in the 2019 Kidney Tumor Segmentation Grand Challenge, where we placed 50th of over 800 participating teams.

Machine Learning on Genomic and Gene Expression Datasets: I participated in the 2017 Multiple Myeloma DREAM Challenge; our team placed 3rd place in final rankings out of 61 teams. The models and techniques we developed are now being used in ongoing research, including a collaboration with UAMS.

Multi-Modal Biomedical Data Analysis: I am currently working with researchers from St. Bernards Medical Center to combine traditional clinical information with features extracted from medical images (chest X-ray) for patient stratification in an emergency room setting. In addition, I am part of an ongoing project with UAMS where we are combining genomic data with cutting edge walking tests to better understand and classify outcomes in Parkinson’s Disease patients.

Enhancing Reproducibility of Research: After developing a complex research software pipeline for a DNA sequencing project, I became interested in improving the tools available for researchers to collaborate, share, and reproduce bioinformatics and biomedical research. This experience resulted in a published paper detailing the “DNAP” pipeline as implemented in a Docker container. My work on both tool containerization and dataset versioning and distribution technologies continues, and I look forward to publishing additional contributions in the area soon.