

## **Jonathan Stubblefield**

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### **Education & Training:**

- Ph.D. in Molecular Biosciences - Arkansas State University, Jonesboro, Arkansas, August 2021
  - Dissertation: Artificial Intelligence Algorithms for Medical Imaging and Healthcare
- M.D. - University of Arkansas Medical Sciences, May 2017
- B.S. in Mathematics - Arkansas State University, Jonesboro, Arkansas, May 2013
  - GPA 3.9. Chancellor's List. Magna Cum Laude.
- B.S. in Interdisciplinary Studies - Arkansas State University, Jonesboro, Arkansas, May 2013
  - Emphasis areas in biology, chemistry, and computer science.
  - GPA 3.9. Chancellor's List. Magna Cum Laude.

### **Certifications:**

- IBM Certified Associate Developer - Quantum Computation using Qiskit v0.2X, September 17th, 2022, [https://www.credly.com/badges/88dc9267-8ec9-4277-b431-5dbbbfe95778/public\\_url](https://www.credly.com/badges/88dc9267-8ec9-4277-b431-5dbbbfe95778/public_url)
- NVIDIA DLI Certificate - Fundamentals of Deep Learning, October 24th, 2023, <https://courses.nvidia.com/certificates/edabd1501d444a9fbabc2735fcc2a9b5>

### **Professional Affiliations:**

- Association of Computing Machinery (ACM)
  - Member, SIGBIO Special Interest Group
- Institute of Electrical and Electronics Engineers (IEEE)

### **Awards:**

- Dorothy Snider Scholarship - August 2013 – May 2015
- Arkansas State University Chancellor's Award - August 2009 – May 2013

### **Personal Statement:**

From an early age, I've been driven by a passion for merging computer science with medicine. At Arkansas State University, I've translated this drive into research on the interplay between AI and medicine. As an assistant professor, I've not only delved into research but also mentored upcoming scientists. I'm deeply committed to using AI to enhance community health and am always seeking collaborations that foster scientific growth.

### **Publications:**

Papers:

1. Gilbert, B., Stubblefield, J., Qualls, J., Huang, X., Pait, A., Yanowitz, K., Hays, A., Richmond, E., Parker, L.; Washington, T. (2023). "Dyslexia and AI: The Use of Artificial Intelligence to Identify and Create Font to Improve Reading Ability of Individuals With Dyslexia." In E. Langran, P. Christensen & J. Sanson (Eds.), Proceedings of Society for

Information Technology & Teacher Education International Conference (pp. 856-865). New Orleans, LA, United States: Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/p/221937/>

2. Causey, J., Stubblefield, J., Qualls, J., Fowler, J., Cai, L., Walker, K., Guan, Y., & Huang, X. (2021). An ensemble of U-Net models for kidney tumor segmentation with CT images. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*. <https://doi.org/10.1109/tcbb.2021.3085608>.
3. Huang, X., Jiang, H., Fowler, J., Guan, Y., Walker, K., Dong, W., Qualls, J., Causey, J., & Stubblefield, J. (2021). Identify differentially expressed genes with large background samples. *International Journal of Computational Biology and Drug Design*, 14(6), 411. <https://doi.org/10.1504/ijcbdd.2021.10045802>
4. Stubblefield, Jonathan, Mitchell Hervert, Jason Causey, Jake Qualls, Wei Dong, Lingrui Cai, Jennifer Fowler, Emily Bellis, Karl Walker, Jason H. Moore, Sara Nehring, and Xiuzhen Huang. Transfer Learning with Chest X-Rays for ER Patient Classification, *Scientific Report* 10, 20900 (2020). <https://doi.org/10.1038/s41598-020-78060-4>
5. Causey, Jason, Keyu Li, Xianghao Chen, Wei Dong, Karl Walker, Jake Qualls, Jonathan Stubblefield, Jason H. Moore, Yuanfang Guan, and Xiuzhen Huang. "Spatial Pyramid Pooling with 3D Convolution Improves Lung Cancer Detection." *IEEE/ACM Transactions on Computational Biology and Bioinformatics* (2020). <https://doi.org/10.1109/tcbb.2020.3027744>
6. Zhou, Wei, Emily S. Bellis, Jonathan Stubblefield, Jason Causey, Jake Qualls, Karl Walker, and Xiuzhen Huang. "Minor QTLs Mining through the Combination of GWAS and Machine Learning Feature Selection." *BioRxiv*, Cold Spring Harbor Laboratory Press, (2019). <http://dx.doi.org/10.1101/702761>

#### Presentations:

1. GSOLE 2024 Conference: "Using AI to Develop an Optimal Novel Font for Readers with Dyslexia", February 2nd, 2024.
2. Developed and Presented Workshop: *NRT Winter Bootcamp*, "How ChatGPT Can Help in Biological Research", January 26, 2024, ASU.
3. Guest Presented Seminar: Fall 2023 Biology Seminar Series, "Biological Applications of Machine Learning" – October 6, 2023, ASU.
4. Guest Presented Seminar: Donaghey College of Science, Technology, Engineering, and Mathematics Colloquium Series, "Computer Vision and its Biological Applications" – September 29, 2023, UALR.
5. SITE Conference: "Dyslexia and AI: The Use of Artificial Intelligence to Identify and Create Fonts to Improve Reading Ability of Individuals With Dyslexia" – March 13-17, 2023.
6. National Social Sciences Association (NSSA): "Dyslexia and AI: The Use of Artificial Intelligence to Identify and Create Fonts to Improve Reading Ability of Individuals With Dyslexia" – September 26, 2022.
7. ACM-BCB Conference: "AI Campus & No-Boundary Thinking: A Grassroots Model for Training the New Generation of Scientists" – August 7-10, 2022.
8. International Conference on Intelligent Biology and Medicine (ICIBM 2021): "KITS19 Kidney Tumor Segmentation: Competition and Paper" – August 8, 2021.

9. DART Y3 Conference: "A 3D Convolutional Neural Network for Detecting Alzheimer's Disease" – April 20, 2023. Arkansas State University Molecular Biosciences Seminar: "Is There a Link Between Statin Therapy and Neurodegenerative Disease?" – August 17, 2020.
10. Arkansas State University Molecular Biosciences Seminar: "Artificial Intelligence Algorithms for Medical Imaging and Healthcare" – July 17, 2020.
11. Arkansas AI-Campus Phase II Showcase, KITS19 – September 17, 2019.

#### Poster Presentations:

1. IEEE-BHI 2023: "Study the Combination of Brain MRI Imaging and Other Datatypes to Improve Alzheimer's Disease Diagnosis" – October 18, 2023.
2. ABI Research Symposium: "Using Large Language Models to Translate Machine Results to Human Results" – October 4, 2023.
3. DART NSF Site Visit: "What Can We Learn from a Million Salmonella Genomes?" – September 19, 2023.
4. ACM-BCB 2023 Conference: "Using Large Language Models to Translate Machine Results to Human Results" – September 4, 2023.
5. IEEE-BHI 2023 Conference, "Study the Combination of Brain MRI Imaging and Other Datatypes to Improve Alzheimer's Disease Diagnosis" (Sole Presenter) – October 18, 2023.

#### Positions & Appointments:

1. **Assistant Professor**, Arkansas State University, Jonesboro, AR – August 2021 – Present
  - Primary focus on research in biomedical informatics and machine learning. Responsibilities include developing new projects, applying for funding, carrying out original research, publishing in academic journals, presenting at academic conferences, teaching classes, mentoring students, and occasionally assisting the university in administrative functions.
2. **Graduate Assistant Researcher**, Arkansas State University – October 2018 – August 2021
  - Focused on biomedical-informatics research with emphasis in artificial intelligence, machine learning approaches applied to radiographic images and genomics. Assisted with writing and publication of academic papers and presentations at academic conferences.
3. **Resident Physician**, University of Oklahoma Medicine/Pediatrics Residency – July 1st, 2017 – July 11th, 2018
  - Participated in the care of both children and adult patients across three hospitals and multiple outpatient clinics. Served as the primary physician on patient's cases under the supervision of an attending physician. Served as the primary care provider for numerous patients in outpatient clinics.

#### Teaching Experience:

##### University Courses:

1. Professor, Concepts of Programming – Summer II 2023
2. Professor, Special Topics Deep Computer Vision – Spring 2023

3. Professor, Techniques in MBS: Bioinformatics Applications – Summer II 2022
4. Professor, Special Topics Deep Computer Vision – Spring 2022
5. Teaching Assistant for Dr. Xiuzhen Huang, Analysis of Algorithms – Fall 2020
6. Teaching Assistant for Dr. Xiuzhen Huang, Analysis of Algorithms – Fall 2019

**Extracurricular/Community Teaching:**

1. Guest Presented Seminar: Fall 2023 Biology Seminar Series, "Biological Applications of Machine Learning" – October 6, 2023, ASU
2. Guest Presented Seminar: Donaghey College of Science, Technology, Engineering, and Mathematics Colloquium Series, "Computer Vision and its Biological Applications" – September 29, 2023, UALR
3. Presented to Coding Summer Camp – June 15, 2023
4. Taught an Intermediate Python class for Arkansas Summer Research Institute (ASRI) – June 8, 2023
5. Served as AI-Campus Coach for Cedars Sinai AI-Campus Phase 1, "U-Penn GBM" – 2022-2023
6. Served as AI-Campus Coach for Cedars Sinai AI-Campus Phase 1, "Chexpert Pathology Detection" – 2022-2023
7. Served as AI-Campus Coach for Cedars Sinai AI-Campus Phase 1, "COVID-19 Genomics" – 2022-2023
8. Served as AI-Campus Coach for National AI-Campus Phase 1, "Reinforcement Learning with The Legend of Zelda" – 2022-2023
9. AI Summer Camp, Co-Lead – July 18-21, 2022
10. Presented for Summer Camp at Arkansas State University (Computer Science) – June 16, 2022
11. Served as an Individual Consultant Coach for Arkansas Summer Research Institute (ASRI) – June 15, 2022 (morning and evening sessions)
12. Taught an Intermediate Python class for Arkansas Summer Research Institute (ASRI) – June 9, 2022
13. Served as AI-Campus Coach for Arkansas AI-Campus Phase 1, "Reinforcement Learning with Connect 4" – 2021-2022

**Academic Activities and Competitions:**

1. COVID-19 EHR Dream Challenge – 2020
2. KITS19 Grand Challenge Competition – 2019

**Funded Grants as PI or Participant:**

1. **Understanding Invasion and Disease Ecology and Evolution through Computational Data Education.**
  - Funded by: NSF Org: DGE Division Of Graduate Education
  - Recipient: ARKANSAS STATE UNIVERSITY
  - Award Number: 2151820
  - Start Date: July 1, 2022
  - End Date: June 30, 2026 (Estimated)

- NSF Program(s): NSF Research Traineeship (NRT)
  - Principal Investigators: Travis Marsico, Jake Qualls, Emily Bellis, Asela Wijeratne, Kyle Gustafson
  - Role: PI added in place of Emily Bellis after Dr. Bellis left the project.
2. **EPSCoR Track I: DART:** "Data Analytics that are Robust and Trusted (DART): From Smart Curation to Socially Aware Decision Making, Socially Aware Data Analytics Thrust".
    - Funded by: NSF, 7/1/2020-6/30/2025.
    - Role: Part of the Data Curation team and developing a new research proposal as part of the team.
  3. **Dyslexia and AI:** "The Use of Artificial Intelligence to Identify and Create Fonts to Improve the Reading Ability of Individuals with Dyslexia".
    - Co-PIs: B. Gilbert, A. Pait, J. Qualls, J. Stubblefield, K. Yanowitz
    - Funded by: Arkansas Biosciences Institute, 2021.
    - Role: Development of machine learning algorithms, student mentoring, paper writing, and research presentations.
  4. **COVIDx:** "A Tool for SARS-CoV-2 Rapid Screening by Chest X-Ray".
    - Co-PI: J. Stubblefield, PI: X. Huang
    - Funded by: Arkansas Bioscience Institute, 2020.
    - Role: Development, training, and evaluation of a machine learning model for diagnosing COVID-19 from chest x-rays.
  5. **Biomedical Computing and Informatics Strategies for Precision Medicine.**
    - Supported by: National Institute of Health (NIH) (R01LM012601), 09/01/17-08/31/21.
  6. **Resources for Development and Validation of Radiomic Analyses & Adaptive Therapy.**
    - Supported by: NIH NCI (U01CA187013), 09/01/14-08/31/20.
  7. **New Approach:** "Early diagnosis of Alzheimer's disease based on MRI neuroimaging via high-dimensional image feature identification".
    - Supported by: National Science Foundation (NSF) (CISE/IIS #1723529), 08/01/17-07/31/20.
    - Role: Development, training, and evaluation of machine learning models for diagnosing Alzheimer's disease from MRI images and writing an academic paper detailing the results.