Joey Paul E. Haynes

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August 2024 - Present

Graduation: May 2026

January 2021 - June 2024

Graduation: June 2024

Education

University of Texas at Austin, Austin, TX

Master of Science (M.S.) in Computer Science

Coursework: Planning, Search, and Reasoning Under Uncertainty

Cumulative GPA: 4.00/4.00

Southern New Hampshire University, Manchester, NH

Bachelor of Science (B.S.) with Honors

Major in Computer Science, Minor in Applied Mathematics

Cumulative GPA: 4.00/4.00

Conference Proceedings **J. P. Haynes**, M. J. Bhalerao, W. T. Honeycutt, J. K. Allen, and F. Mistree. *Predictive Modeling for Public Policy Design: The Impact of Artificial Lights at Night (ALAN) on Bird Strikes*. ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, DETC2024-143780, Washington, D.C., August 2024

Journal Articles **J. P. Haynes**, M. J. Bhalerao, W. T. Honeycutt, J. K. Allen, and F. Mistree. *Predicting Bird Strike Occurrences through a Model-Based Cyber-Physical-Social System Design*. [Under Review]. Submitted to ASME Journal of Computing and Information Science in Engineering (JCISE)

Invited Talks

Predictive Modeling for Public Policy Design: The Impact of Artificial Lights at Night (ALAN) on Bird Strikes. 42nd ASME/AIAA Regional Symposium, Oral Roberts University, Tulsa, OK, April 2024

Predicting Bird Strike Occurrences through a Model-Based Cyber-Physical-Social System Design. Webinar given to the SRL@OU Conversations Series, April 2024

Oral Presentations Predictive Modeling for Public Policy Design: The Impact of Artificial Lights at Night (ALAN) on Bird Strikes. ASME Computers and Information in Engineering Conference (CIE), Washington, D.C., August 2024

Adaptive Manufacturing Systems: Leveraging Predictive Modeling and Cyber-Physical-Social Systems for Real-Time Adaptation. ASME Computers and Information in Engineering Conference (CIE), Washington, D.C., August 2024

Experience

Systems Realization Laboratory at OU, Norman, OK August 2023-Present Remote Research Intern advised by Dr. Janet K. Allen and Dr. Farrokh Mistree at the University of Oklahoma

- Collaborated in a team of researchers as lead author for the ALAN project, investigating the impact of artificial lights at night (ALAN) on bird strike occurrences
- Helped define the research problem by identifying knowledge gaps in the existing work, illustrating a method of predictive modeling informed by cyber-physical-social systems (CPSS)
- Conducted exploratory data analysis (EDA) using GIS tools, integrating data including the FAA wildlife strike database, BirdCast migration forecasts, and light pollution rasters
- \bullet Developed a spatiotemporal predictive model using decision tree regression with GIS data, achieving an R-squared value of 0.78
- Applied k-fold cross-validation and hyperparameter tuning to optimize model performance, achieving an average absolute error of 0.95 strikes
- Winner of the NSF/ASME student design essay contest for an essay on adaptive manufacturing systems using predictive modeling and cyber-physical-social systems (CPSS)
- Authored 2 first-author publications (IDETC, JCISE) and presented 4 technical presentations as part of my work in this lab

Walmart, Yukon, OK

June 2020 - Present

Sales Associate

• Balanced a customer-facing role throughout undergraduate studies, developing strong time management and leadership skills

- Trained and mentored over 20 employees, enhancing team efficiency and communication
- \bullet Managed merchandise presentation and facility maintenance, contributing to a 5.5% YoY sales increase in a \$100M/year facility

Projects

Academic Portfolio Website — jpthefish.com

December 2022 - Present

Messaging platform where users can collaborate and share design and research ideas

- Deployed a full-stack web application with daily traffic using React.js, Firebase, and SQL
- Created a chatroom with sign-in authentication, back-end security logic, and word filtering
- Designed and implemented a responsive UX design with careful attention to visual accessibility

Replication of 3D Scenes in OpenGL with Ronald Bishop

Spring 2024

Course project, CS-330 Computational Graphics and Visualization

- Developed an interactive 3D graphics scene using OpenGL to replicate real-world 2D images into a navigable virtual environment
- Modularized the shaders for vertex and fragment processing, optimizing the rendering process and enhancing the realism of textures, lighting, and material properties
- Implemented a user interface with keyboard and mouse controls for navigating the scene, exploring orthographic and perspective views, and simulating camera movements
- Explored the applicability of graphics pipeline techniques to computer vision by simulating an example of object recognition and spatial analysis within a controlled 3D environment

Grazioso Salvare Analytics Dashboard with Dr. Sherri Maciosek

Spring 2023

Course project, CS-340 Client/Server Development

- Developed an analytics dashboard for an Austin-based rescue-animal company using Python, MongoDB, and the Dash framework
- Implemented interactive data visualization components, including tables, charts, and geolocation maps, enabling stakeholders to filter and analyze animal shelter data by relevant criteria

Honors	and
Awards	

NSF/ASME Student Design Essay Competition Award – \$1,500 Graduation with Honors and Distinction at SNHU (Summa Cum Laude) Alpha Sigma Lambda

June 2024 December 2023

June 2024

Service and Leadership Roles Member, National Society of Leadership and Success (NSLS) Lab Volunteer, Systems Realization Laboratory at OU Employee Mentor and Supervisor, Walmart Volunteer Contributor, Wikimedia Foundation March 2024 - Present August 2023 - Present February 2022 - Present

May 2020 - January 2022

Technical Skills Languages: Python, SQL, R, Java, C/C++, MATLAB, JavaScript Data technology: PostgreSQL, MySQL, MongoDB, Firebase/Firestore Tools and frameworks: Git, AWS, Docker, OpenGL, React, Tableau

Certifications

Google Advanced Data Analytics Certificate, Coursera Inc. People and Business Leadership Certificate, Bellevue University

December 2023 March 2021

Languages and Other Skills Intermediate Spanish (B1) and French (B2) Language Fluency

Classical and Jazz Piano

References

Dr. Farrokh Mistree

Professor and L.A. Comp Chair at OU, Email: farrokh.mistree@ou.edu, Tel: (404) 502-9086

Dr. Janet K. Allen

Professor and John and Mary Moore Chair at OU, Email: janet.allen@ou.edu, Tel: (405) 550-3969

Dr. Sherri Maciosek

Adjunct Professor at SNHU, Email: s.maciosek@snhu.edu, Tel: (715) 479-3408