Jesse Lane

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Professional Summary

Research Engineer with a PhD in Human Computer Interaction, specializing in AI/ML technologies and XR applications. Extensive experience in aerospace, finance, and transportation industries. Combines theoretical knowledge with practical problem-solving skills to deliver innovative solutions. Seeking challenging Research Engineer roles that leverage expertise in AI, XR, and emerging technologies.

Experience

Research Engineer

Collins Aerospace, Cedar Rapids, Iowa (Remote) *January 2019 – Present*

- Lead and contribute to cutting-edge projects in augmented reality, edge computing, and space technologies for military and aerospace applications.
- Developed edge-based, containerized automatic target recognition (ATR) pipeline deployable to accelerated devices, managing a cross-cultural team of 5 developers.
- Designed and implemented Unity 3D-based augmented reality informatics prototype for next-generation lunar space suit, resulting in successful field tests and published research.
- Architected and contributed to analytics and prognostics program for space infrastructure, analyzing data from International Space Station assets.
- Serve as Principal Investigator on multiple early-stage projects, including causal inference for UAV missions and Kubernetes deployment on space-based mesh networks.
- Implement DevOps practices using GitHub, GitLab, Jenkins, Artifactory, Harbor, Helm, and Docker for various projects.
- Mentor team members and contribute to AI/ML Community of Practice, fostering knowledge sharing and innovation within the organization.

Senior Software Developer

TaxAct, Cedar Rapids, Iowa *October 2017 – January 2019*

- Developed and maintained critical applications and APIs for electronic tax return filing.
- Implemented new features using C#, .NET, and cloud technologies to improve tax filing efficiency.
- Collaborated with cross-functional teams to align software development with business objectives.

Engineer-in-Residence

NewBoCo, Cedar Rapids, Iowa *December 2016 – September 2017*

- Managed rapid prototyping and virtual reality labs for the startup accelerator.
- Coordinated VR services, 3D printing, and electronics prototyping.
- Conducted workshops and training sessions on emerging technologies.
- Developed innovative solutions using VR and rapid prototyping technologies.

Software Engineer

Intermec by Honeywell, Cedar Rapids, Iowa *November 2011 – December 2016*

- Customized product inventory software for the logistics industry.
- Developed GUI controls and configured background services.
- Implemented software improvements that increased efficiency and accuracy of inventory management systems.

Intermediate Software Engineer

Rockwell Collins (nka Collins Aerospace), Cedar Rapids, Iowa *March 2010 – November 2011*

- Developed test scripts and build tools using Python for flight plan system testing.
- Contributed to re-hosting an airplane maintenance system to a desktop simulation environment.
- Collaborated with teams to ensure software met aerospace industry standards and requirements.

Graduate Research Assistant

Iowa State University, Ames, Iowa *May 2005 – May 2010*

- Developed a virtual reality simulation of a John Deere combine, showcasing VR applications in agriculture.

- Researched methods for importing electronics designs into VR environments for visualization and analysis.
- Assisted in various VR research projects, contributing to the advancement of VR technologies in engineering applications.

Software Developer

Infiscape Corporation, Ames, Iowa *May 2006 – November 2006*

- Refactored and extended proprietary libraries for an industrial assembly project using VR technologies.
- Contributed to improving VR software performance and user experience.

Education

PhD in Human Computer Interaction

Iowa State University, Ames, Iowa *2023*

Bachelor of Science in Computer Science, with distinction

Iowa State University, Ames, Iowa *May 2005*

Bachelor of Science in Mathematics, with distinction

Iowa State University, Ames, Iowa *May 2005*

Skills

Core Competencies

- Artificial Intelligence / Machine Learning
- Augmented, Mixed, and Virtual Reality (XR)
- DevOps, GitOps, MLOps (XOps)
- Edge Computing & Embedded Systems
- Software Architecture & System Design
- Computer Vision & Image Processing

Programming & Frameworks

- Languages: Python, C#, Java, C++, Julia, SQL
- AI/ML: TensorFlow, PyTorch, Ray (RLlib), Gym/Gymnasium
- Data Science: NumPy, Pandas, Matplotlib, Seaborn
- XR Development: Unity 3D, OpenXR, MRTK3
- Emerging Interest: Rust

Tools & Technologies

- MLOps/DevOps/GitOps:
    - Containerization & Orchestration: Docker, Kubernetes, K3s
    - CI/CD: Jenkins, GitHub Actions, GitLab CI
    - Configuration Management: Ansible, Tilt
    - Version Control: Git, Subversion (SVN)
    - ML Experiment Tracking: Weights & Biases, TensorBoard, DVC
    - Artifact Management: Artifactory, Harbor
- Cloud Platforms: AWS, GCP, on-premises infrastructure
- Big Data & Databases:
    - Distributed Systems: Apache Spark, Kafka
    - Databases: Cassandra, Redis
- Monitoring & Observability: Kibana, Grafana, Prometheus
- Hardware Acceleration: FPGA (Xilinx Vitis AI), NVIDIA Jetson, Coral.ai TPU, NXP i.MX8 NPU

Methodologies & Professional Skills

- Research & Development, Technical Leadership
- Systems Thinking, Interdisciplinary Problem Solving
- Rapid Prototyping, Algorithm Design
- Cross-functional Collaboration, Mentoring
- Problem-solving, Critical Thinking
- Agile Development