# 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