

Iris Seaman

Senior Data Scientist | Production AI, Python Backend Systems & ML Research

irisrseaman@gmail.com • (956) 445-9096 • irisseaman.com • LinkedIn • GitHub • ORCID

Senior data scientist and Python engineer building and maintaining production LLM applications, computer-vision pipelines, and event-driven cloud services. Experience spans context-aware messaging, data ingestion, workflow orchestration, and operational monitoring. Doctoral research adds depth in probabilistic modeling, uncertainty calibration, and rigorous evaluation.

PROFESSIONAL EXPERIENCE

Senior Data Scientist

May 2023 – Sep 2026

Gray Falcon LLC | Remote

- Designed and maintained **LLM-powered messaging services** for classification, translation, and response generation, incorporating conversation history and database-backed context into operational workflows.
- Built and maintained **Python services** for violation submission, status ingestion, and account-lifecycle workflows, coordinating Pub/Sub workers, browser automation, and PostgreSQL state tracking.
- Developed and maintained **Airflow DAGs** for marketplace data collection and enforcement workflows; improved validation, failure handling, and operational visibility across dependent services.
- Built and scaled image-infringement pipelines across **hundreds of thousands of e-commerce images** using perceptual hashing, SIFT features, and image-comparison metrics.
- Built a **reusable OCR service** that persisted extracted image text through idempotent database updates, supporting multiple downstream detection and analysis workflows.
- Developed shared authentication, email-processing, and account-management utilities, alongside **monitoring dashboards and alerts** for production automation.

Developer

Mar 2022 – 2023

Gray Falcon LLC | Remote

- Built the initial image-infringement pipeline for Walmart and Amazon product imagery using perceptual hashing, SIFT features, and image-comparison methods.
- Developed production tooling for account provisioning, communications, browser-profile isolation, proxy workflows, CAPTCHA integrations, secure internal access, and real-time monitoring.

Associate Software Engineer

2014 – 2016

Imagine Learning | Provo, UT

- Implemented one of the company's early machine-learning models for evaluating free-response student text, helping establish ML as a product capability.
- Built and maintained REST APIs for educator-facing analytics and reporting; collaborated with product and design partners on educational software.

TECHNICAL SKILLS

Backend: Python; SQL; FastAPI; Starlette; SQLAlchemy; PostgreSQL; async services; REST APIs; microservices

Cloud: Google Cloud; Cloud Run; Pub/Sub; Cloud SQL; Cloud Storage; Airflow; Docker; Terraform; CI/CD

Applied AI: LLM applications; context assembly; computer vision; OCR; image similarity; monitoring; regression testing

ML & evaluation: PyTorch; PyTorch Geometric; scikit-learn; NumPy; SciPy; probabilistic modeling; conformal prediction; Monte Carlo methods; experimental design

DOCTORAL RESEARCH & MANUSCRIPTS

PhD Researcher, Machine Intelligence Lab

Aug 2024 – Present

The University of Texas Rio Grande Valley | Edinburg, TX

Endpoint-Calibrated Spatial Graph Rollouts for FTV Forecasting

First-author manuscript draft, 2026

Developed graph forecasting with Monte Carlo simulation and conformal calibration. Across five patient-held-out folds (758 I-SPY2/ACRIN-6698 patients), reduced deterministic T0-T3 functional tumor volume MAE from 12.88 to 4.63 mL and 90% interval width from 59.51 to 22.38 mL in **internal cross-validation**.

Tumor-Graph Deep Learning from Pretreatment DCE-MRI

Double-blind manuscript draft, 2026

Combined frozen ResNet-18 embeddings with graph message passing. Trained on 556 I-SPY2 patients; froze model and uncertainty choices before evaluating 202 nested ACRIN-6698 patients held out from training and calibration, achieving 3.08 mL deterministic FTV error and 0.936 coverage for the selected 90% interval.

Stochastic Digital Twin for Neoadjuvant Chemotherapy

Collaborative work in progress, 2026

Developing stochastic reaction-diffusion models with sequential Bayesian calibration, reduced-rank proliferation fields, and explicit identifiability limits. Treatment optimization and physical longitudinal spatial correspondence remain outside the validated scope.

PUBLICATIONS & THESIS

High-multiplexity imaging reveals distinct modes of translating time into space during embryonic patterning

2026

J. Garcia-Guillen, M. Ahmadi, T. Frimpong, **I. Seaman**, et al. Revised manuscript resubmitted to *PLOS Genetics*. Designed and implemented automated 2D similarity-transform registration for sequential fluorescence images. [Code](#).

Nested Reasoning About Autonomous Agents Using Probabilistic Programs

2018

I. R. Seaman, J.-W. van de Meent, and D. Wingate. [arXiv:1812.01569](#); spotlight at the ICML 2019 Workshop on Generative Modeling and Model-Based Reasoning for Robotics and AI.

Probabilistic Programming for Theory of Mind for Autonomous Decision Making

2018

I. R. Seaman. Master's thesis, Brigham Young University. [ScholarsArchive 6826](#).

Personalized Table-Top Game Recommendations

2017

Y.-K. Ng and **I. Seaman**. *IEEE ICTAI*, pp. 396-403. doi:10.1109/ICTAI.2017.00068.

Making Personalized Movie Recommendations for Children

2016

E. Tan, **I. Seaman**, H. Leung, and Y.-K. Ng. *18th International Conference on Information Integration and Web-Based Applications & Services*, pp. 96-105.

Prevalence and Attitudes about Illicit and Prescription Drugs on Twitter

2016

I. Seaman and C. G. Giraud-Carrier. *IEEE ICHI*, pp. 14-17. doi:10.1109/ICHI.2016.98.

EDUCATION

The University of Texas Rio Grande Valley

Aug 2024 – Present

PhD in progress, Computer Science with Interdisciplinary Applications

Northeastern University

Sep 2018 – 2020

Doctoral studies, Computer Science

Brigham Young University

Sep 2016 – Aug 2018

MS, Computer Science

Massachusetts Institute of Technology

Jul 2017 – Aug 2017

Visiting Student, MIT Probabilistic Computing Project

Brigham Young University

Sep 2011 – Dec 2014

BS, Computer Science