

Kristian Mischke

Lead Data Scientist - Generative AI

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Polymath who enjoys grokking large and complex systems. Over six years of professional experience in Software Engineering with an initial focus on Video Game development, followed by full-stack web app engineering, and now in building cloud solutions with Generative AI. Always looking to surround myself with people I can learn from. I have a passion for sustainability and building ethical systems that help humanity.

Experience

Lead Data Scientist - Generative AI

Booz Allen Hamilton Inc.

October 2023-Present

Remote-Hybrid | MD | Washington, D.C.

- Championed migration of Azure data ingestion pipeline to AWS including switching from Azure AI Video Indexer, Document Intelligence, and Azure AI Search to Amazon Transcribe, Amazon Textract, and OpenSearch Serverless respectively.
- One of the primary contributors to a multi-cloud (Azure & AWS), multi-language GenAI platform (Java Spring Boot Web App & Python data ingestion pipeline) serving 200+ active Alpha users while pursuing ATO (Authority To Operate) in production environment for thousands of users.
- Developed novel RAG approach for interleaving generated content with reliable citation blurbs using prompt-engineering and Levenshtein edit operations.
- Solutioned data processing approach for government RFP (Request for Proposal) documents using Azure Functions and prompt-engineering OpenAI models with structured outputs to extract and classify sections of the document.
- Maintained company internal newsletter broadcast to hundreds of employees for latest GenAI advancements and research.

Associate Software Engineer

Ronday Technologies LLC

August 2021-July 2023

Remote

- Adapted quickly to changing requirements and priorities, demonstrating flexibility and a growth mindset in a dynamic startup environment.
- Conducted thorough code reviews and provided constructive feedback to peers, fostering a culture of collective learning and high-quality code standards.
- Pursued R&D in Generative AI and within a week, rapidly developed a GPT-4 prompt 3D sandbox world demo.
- Reduced time to add new backend object types from days to minutes by implementing a generic object data structure stored in Postgres and validated by JSON schemas, streamlining the development process.
- Integrated Mixpanel analytics for data-driven decision-making, enabling the team to make informed decisions and improve overall application performance.
- Successfully integrated Unity WebGL building, automated asset exporting, and hosting addressable assets on AWS, improving time to enter platform providing the user with a seamless experience.
- Managed Dev-Ops build pipeline with Concourse, ensuring a unified build process for optimal simplicity and efficiency.
- Demonstrated a deep understanding of end-to-end networking stacks, contributed to distributed realtime backend architecture powered by SignalR, Redis, and Postgres.
- Doubled the number of users capable of being in a space at a given time, by unifying the network paradigm.

Data Science Research Intern

RedShred LLC

March 2021-July 2021

Catonsville, MD

- Fine-tuned RoBERTa for classifying emails with .909 median f1-score, which outperformed the 0.78 of the prior models.
- Annotated naval document dataset with Label Studio to train task-specific models for segmenting documents and extracting key actors and events with NER extraction.
- Highlighted key connections found in naval reports displaying actors, weather events, and locations in a custom interactive dashboard made with streamlit
- Used MLFlow to manage experiments and track metrics during model training which improved collaboration with team members.

Junior Programmer

Mohawk Games LLC

Jan 2018-July 2021

Linthicum, MD

- Integrated mod.io API into Old World; added support for modding with AssetBundles and for Translation mods.
- Assessed capability of GANs (Generative Adversarial Networks) through R&D for generating in-game character portraits.

- Developed a Text Manager class integrating Mohawk's localization system with hierarchical text generation
- Implemented the in-game "Event Browser" tool in [Old World](#) that allows designers and writers to easily modify and create XML files for in-game events.
- Wrote a [Unity](#) tool that allows developers to observe the dependency relations of Unity assets.

Education

University of Maryland, Baltimore County

May 2021

Bachelor of Science, Computer Science (Game Development Track) Minor in Applied Linguistics

3.942 GPA Outstanding Senior in Computer Science

Continued Learning

Secure Code Warrior: In-depth OWASP Top 10 Awareness

2022

[**CD.Training: TDD & BDD - Design Through Testing**](#)

2023

Projects

Recurring Moment	Spring 2021
- Conceptualized, Pitched, and Prototyped original idea during the first 3 weeks of class. - Acted as Lead Designer and interfaced with the Art & Programming teams at weekly meetings. - Project management with SCRUM development sprints and burndown charts - Implemented core mechanics and sparse data structures to store time-travel data.	
GroupFormer	Spring 2021
- AGILE and GitFlow frameworks for development sprints - Developed front-end form for setting up the GroupFormer project using Django , HTML , and JQuery . - Collaborated with teammates to develop algorithm for scoring participant groupings. - Integrated Django authentication to secure instructor's forms.	
Data with a K	2022-Present
Devs with a K LLC	
- Ideated data abstraction layer to handle different kinds of data. - Architected data pipelining suite in Python backed by Cassandra and Redis . - Developed receipt processing API that stitches multiple receipt images together using OCR to extract receipt items and costs. - Accelerated knowledge of using Docker with Nvidia GPUs and AMD RoCM APUs for Machine Learning applications. - Implemented security standards with password rotation using Vault and authentication with Auth0 JWTs	
"Magic Random Gathering"	2019-Present
- Developed AI magic card generators combining text and image Generative AI . - Created modified BNF grammar for card generation until switching to GPT-3 when it was released. - Card art generation with VQGAN+CLIP and later Stable Diffusion and Midjourney - Printed hundreds of cards & played dozens of games, including at a local game store!	
Applying the Cascaded Finite State Grammar Induction Model to Trading Card Game Corpora	Fall 2020
CMSC 473 Intro to NLP Class @ UMBC	
- Proposed the original idea for this final group project . - Implemented-with a group of 3 peers-a Grammar Induction algorithm in Python from an academic paper that uses a cascaded chunking algorithm with HMMs . - We analyzed model performance using perplexity, and we applied it to Trading Card Games like <i>Magic: the Gathering</i> , <i>Yu-Gi-Oh!</i> and others.	
Linux Chess Kernel Modules	Spring 2020
CMSC 421 Operating Systems class @ UMBC	
- Implemented a device module in C to store and manage chess game states across multiple file pointers; with the option to play against an AI opponent using the min-max with alpha-beta pruning algorithm. - Only student out of the three sections of the course to complete all the extra credit and be eligible for the course-wide tournament.	
Volunteer Work & Clubs	
Volunteer Tutor	2014-2021
Crossroads Homeschool CO-OP	Baltimore, MD
- Managed classes containing about a dozen Middle- or High-School students - Developed HS Programming curriculum based off the book Learning Processing by Daniel Shiffman. - Taught students about variables, program flow, and basic problem-solving using Scratch by MIT. - Integrated my YouTube video tutorials for individualized instruction for the 2018-2020 School Years. - Utilized the CodeHS online curriculum for managing and tracking student assignments for a HS Web Design class.	