Kristian Mischke

Software Engineer

| Randallstown, MD | 443-875-3124 | kristianmischke@gmail.com | kkcoder.net |

Problem-solver and thinker with over six years of experience in the industry. I enjoy video game development and am very passionate about utilizing AI and ML to help people with their data. I'm working towards a long-term goal of reforming education by bringing it up to speed with modern technology and learner-centric approaches.

Experience

Associate Software Engineer — August 2021–Present

Ronday Technologies LLC — **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 distrubted 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 — March 2021–July 2021

RedShred LLC — **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 — Jan 2018–July 2021

Mohawk Games LLC — **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.
- Architectured 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!

Schess: A Chess Battle-Royal Variant — Aug 2020–Present

schessgame.com

- Acted as the Lead Programmer during and after a 48-hour game jam with three other friends.
- Responsible for game-logic, and networking code using *Remote Procedure Calls (RPCs)* with Photon Unity Networking (PUN) in the `Unity 3D` game engine.

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 *Magic: the Gathering*, *Yu-Gi-Oh!* 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.

Other Note-Worthy Classes from UMBC — 2020

- *Computer Graphics* (Spring 2020) Implemented *ray-tracing* algorithm in `C++`. Used shaders and GLEW and GLSL to push vertices to the render pipeline. We used `Git` version control to track progress.
- *Graphics for Games* (Fall 2020). Navigated the `Unreal Engine C++` source code. Projects focused on implementing graphics algorithms as Blueprints, Plugins, and Engine modifications.

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.

Member & Project Lead Programmer — Fall 2018–Fall 2019

UMBC Game Developers Club

- Acted as Lead Programmer for Role Playing Gamble, one of the club 2018-2019 games.
- Managed tasks with a group of 2 other programmers throughout the duration of the project, using `Git` for versioning & merging and `Unity 3D` & `C#` technologies for development.