Jack Kiefer

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Education

- **Carnegie Mellon University** — Pittsburgh, PA
  B.S. in Computer Science, Statistics and Machine Learning — *August 2020 - May 2024*
  - GPA: 3.61/4.0; University Honors

Experience

- **Major League Baseball** — Boulder, CO
  Software Engineering Intern - Predictive Gaming — *May - August 2023*
  - Developed and deployed a scalable microservice that processes over 100K+ daily game interactions. This included architecting a scalable GCP Spanner database, implementing a Pub/Sub messaging system for seamless service communication, and building APIs to summarize and analyze the data. Additionally, wrote comprehensive unit and integration tests to ensure reliability, all within the Spring Framework ecosystem
  - Assisted in the effort to integrate an acquired game, Pickle, into the MLB Play services. Built REST APIs to allow guest users to interact with the back-end service allowing thousands of users to get rewards from playing Pickle
  - Wrote extensive unit and integration tests to accompany the APIs which automatically run upon build in the CI/CD environment. Improved test coverage by 20% for the Pickle microservice
- **Sugarwish** — Denver, CO
  Data Science Intern — *May - August 2021, May - August 2022*
  - Built a neural network with scikit-learn to predict the expected revenue of new corporate account signups more accurately. Improved prediction accuracy by 50% compared to previous methods. This enhancement significantly boosted sales team productivity by providing more reliable insights
  - Created dashboards using SQL queries to give executives important information to help them stay on top of business trends
  - Accelerated data summarization by 1000x with SQL, saving valuable time for the CFO
- **Growth Prospects** — Boulder, CO
  Data Analysis Intern — *May - August 2020*
  - Developed an Excel-based system to track inventory of 100+ items, minimizing company stockouts. Additionally, created a dashboard to recommend which inventory is needed to purchase based on inventory stock and predicted usage
  - Drove hundreds of additional sales by accurately predicting customer birthdays, strategically timing outreach to encourage repeat purchases
- **Magic: The Gathering**
  Professional Card Player — *2018 - 2020*
  - Ranked as the #1 Youth Player worldwide in 2019 and 2020.
  - Contracted for brand promotion and to write articles on Magic strategy, card analysis, and tournament advice

Projects

- **Chessora:** Created a multiplayer chess-inspired game that blends traditional chess with auto battler mechanics, introducing new piece types and upgrades through a shop interface. Implemented robust graphics with Unity and client/server multiplayer support using Unity Networking. Planning to release it for purchase on Steam
- **MTG AI:** Developed an OpenAI Gym environment where an AI learned a simplified version of Magic: The Gathering through multi-agent reinforcement learning, mastering advanced strategies such as double-blocking or planning attacks
- **Scrapyard Scramble:** Crafted a two-player card-drafting game in Python featuring deep strategic mechanics. Implemented a challenging ”versus AI” mode using the minimax algorithm to enhance the single-player experience
- **POKEAI:** Created an AI that autonomously navigates Pokémon using a CNN to analyze visuals, map obstacles, and handle events. Built with Python and TensorFlow, resulting in accurate obstacle detection and efficient navigation
- **FlirtFilter:** Built a web-based messaging app using React, HTML, CSS, and JavaScript, integrating the GPT-3 API to automatically adjust the tone of messages, fostering more positive communication
- **FeedCMU:** Engineered a web application with React and the Google Maps API that identifies free/excess food locations near CMU’s campus and provides walking directions
- **Conquest Calculator:** Built a Hearthstone lineup optimizer using Nash equilibria simulations, leading CMU’s team to the collegiate playoffs
- **Personal Website:** Designed, coded, and launched a personal website—jackkiefer.com—using HTML and CSS to showcase my projects in more detail

Technical Skills

- **Languages:** Python, JavaScript, C, C#, Kotlin, Go, SQL, R, SML, HTML, CSS
- **Technologies:** Google Cloud Platform, TensorFlow, Scikit-Learn, OpenAI Gym, Spring Boot, GitHub, Agile Scrum, GKE, Postman, Linux, JUnit, Numpy, Pandas, JIRA, Unity