JACOB PETTERLE

720-271-5053 | jacobpetterle@gmail.com | https://github.com/tai-team-ai

SKILLS:

- **Languages:** Python, SQL, Mongo QL, Typescript, React, CSS, Java
- **Technologies:** Docker, Langchain, FASTAPI, pydantic, SPLADE, hybrid search, Spark, pytest, pyTorch
- **IAC & Databases:** CDK, MongoDB, DynamoDB, Postgres, AWS Redshift, API Gateway, Lambda, SQS, S3
- **Product Management:** User-Centric Design, Usability Testing, SCRUM, TDD, Code Lifecycle Management

WORK EXPERIENCE:

CEO, Applied AI Architect | T.A.I. Education Systems **January 2023 - Present**

- Conducting extensive customer research, with **15 students/professors** interviewed and more scheduled
- Leading a **cross-functional team of 5** to design a product that students and professors love
- Architecting a **hybrid search engine from scratch** covering chunking, indexing, and information retrieval
- Demonstrated interest in TAI by securing pilots covering **4500 students across 5 universities** this fall

Data Engineer II | BENlabs **October 2022 - Present**

- Engineering a recommendation system serving **200 concurrent users**; load tested to 1000s
- Designing a search engine for tech org, minimizing time to retrieve API docs, customer data, and service docs
- Pioneered the use of large scale behavior data, prompting a **$100k contract** with the vendor
  - Ingested 200GB of raw unstructured data and created an id system for audience behavior
  - Iteratively developed customer facing prototypes to validate the VP of the system
- Created parameterizable IAC to **standardize dev environments**, soon to be **used by the entire DS team**
  - App Link: https://huggingface.co/spaces/jacob-petterle/cloudtop-deployer
- Independently designed & implemented an ETL pipeline that **ingests 1.5 TB of data per month**

Engineering Lead | Magna-Shox **August 2020 - June 2022**

- Architectured a finite element automation python codebase, **improving design cycle time by 10x**
- Architectured a python **convolutional neural network** vehicle model to predict passenger comfort
  - **Processed 45 million data points** including visualization, filtering, and outlier detection
- Designed a company wide business strategy and VP, **raising over $20,000 in seed capital**
- Managed multiple teams to design, manufacture, and validate **7 unique prototypes over a 20 month period**
  - Independently designed, analyzed, & manufactured a **1100+ part MVP with 28 unique parts**
- Established an intellectual property strategy & filed a system-wide **provisional utility patent**

Manufacturing Engineering Intern | Sierra Space **May 2021 - August 2021**

- **Decreased run time** of FEA software algorithm used across multiple design teams **by 39%**
- Designed a procedure **allowing the measurement of inaccessible** locations on the launch vehicle

Controls Engineering Intern | JR Automation, SetPoint **January 2020 - May 2020**

- Developed lean control algorithms, **exceeding customer cycle time by 10%** for a new product line
- Established manufacturing procedures, **scaling production of a new product line to 10+ units**

PROJECTS:

AI for U, AI Template App **January 2023 - May 2023**

- **Designed from scratch a LLM** template app (www.aiforu.app) providing simple AI templates for everyone
- Lead a team of **5 to ideate, prototype, and validate** an AI template app with users

React Mapping Applet with RESTful API & SQL Server **September 2020 - November 2020**

- Implemented backend nearest neighbor & 2-opt algorithms **improving trip length by 15x**
- Researched optimization performance over 500 samples, verifying a **server response time of <1 sec**
- Implemented **REST API schema and accessibility minded** map routing, route import/export, & route table

Apache Commons Lang 3 JUnit Testing **February 2022 - May 2022**

- **Increased** line, branch, method, & mutation coverage **by 17%, 31%, 31%, & 18%** respectively
- Researched Ekstazi & OpenClover regression performance over 100 repository commits

Container & VM Performance Literature Review **May 2022 - July 2022**

- Compared CPU, memory, and network utilization/performance benefits & drawbacks
- Researched container implementations including Docker, OpenVZ, & Linux Containers

EDUCATION:

Colorado State University, Fort Collins, CO
Major: Bachelors of **Computer Science** w/emphasis in **Software Engineering & Machine Learning**
2nd Major: Bachelors of **Mechanical Engineering** w/emphasis in **Numerical Methods & Controls**