

HAEUK KIM

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SUMMARY

Senior software engineer with 7+ years building research-data tools and platforms. I've owned major backend systems on the IEDB Tools platform end to end, from a high-performance search engine to internal frameworks and full containerization, with a focus on reliable, standardized tooling others can build on.

PROFESSIONAL EXPERIENCE

SENIOR SOFTWARE ENGINEER | *La Jolla Institute for Immunology* Present

- Engineered a high-performance search engine for a database of **92,000 genetic records**, using a custom ranking algorithm and data optimization techniques. **Improved load speed by 98.5%** and created an **API with Swagger** to enable easy integration with other research tools and pipelines.
- Built **NGParser**, a **Python framework that unified 12 data processing tools** into a standardized, modular ecosystem. Automated code scaffolding, environment setup, dependency management, and packaging pipelines, **reducing setup and onboarding time by 80%** and eliminating most manual configuration steps. **Migrated 5 applications** (7 in progress) and created a scalable foundation for future tool integration.
- Partnered with a computational biologist to productize **BCRMatch**, a machine-learning antibody-similarity tool, by integrating her model into a **CLI tool and web app** for lab-wide use. During data review, caught **duplicate and misaligned records** that she used to correct the model before release.

SOFTWARE DEVELOPER II | *La Jolla Institute for Immunology* 2021 - 2023

- Led full containerization of the **40GB IEDB Tools Website (50+ interdependent apps)**, introducing **Docker** and **docker-compose** to replace legacy VMs. **Cut deployment footprint by 50%** and established the institute's first standardized DevOps workflow.
- Designed and implemented a solution to run **3 legacy Python tools** in modern server environments by containerizing each with **Docker** and orchestrating requests/responses through a **Django app** using **Gunicorn** and **Docker SDK**, **ensuring uninterrupted access for all researchers during server updates**.
- Created InputManager, a reusable Python module automating input validation and handling for **21+ schemas**, **eliminating repetitive code and standardizing data workflows across tools**.

Software Developer I | *La Jolla Institute for Immunology* 2018 - 2020

- Delivered **22 official software releases** for research tools licensed to partners including **AstraZeneca, Vertex, Amgen, Moderna, and Pfizer**. Oversaw the full lifecycle (**triage, development, packaging, deployment, and support**), standardizing reliable **VMware OVF** and **Docker deployments** to ensure reliability across environments.
- Resolved 400+ support tickets** using **Zendesk CRM** while guiding licensees and researchers through on-prem and cloud deployments. Facilitated software adoption through **proactive troubleshooting** and **cross-functional collaboration**.

Machine Learning Research Assistant | *San Diego Supercomputer Center* 2017 - 2018

- Designed and implemented machine-learning models to predict patterns in complex sequence data. Collaborated with two engineers to integrate complementary feature sets, **boosting overall model accuracy to 95%** and achieving a **75% F1 score** for identifying key elements, demonstrating strong precision, recall, and model reliability.

SKILLS

Programming & Frameworks: Python | SQL | pandas | NumPy | scikit-learn | argparse | Django | Django REST framework | REST APIs

DevOps & Deployment: Docker | docker-compose | Harbor Registry | AWS | GitLab CI/CD | VMware Virtual Machines | Poetry | Pyenv | NGINX | Gunicorn | setuptools | unittest

Data Processing & ML Tools: Jupyter Notebook | Matplotlib | Plotly

Collaboration & Tools: GitLab | Confluence | Zendesk CRM | Swagger | Sphinx | Lyx

EDUCATION

B.S. Computer Science w/spec. in Bioinformatics, *UC San Diego*

2018