

Arthur Vargas

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PROFESSIONAL SUMMARY

Software Engineer with 6 years of experience developing scalable Python-based data pipelines and tools for research environments. Skilled in modular design, workflow orchestration (Nextflow) in Unix HPC environments and cloud platforms (AWS). Effective collaborator with cross-functional teams, dedicated to user experience, research-focused infrastructure, and promotion of engineering best practices.

WORK EXPERIENCE

IQVIA | Senior Software Engineer

NOV 2021 – AUG 2024 | Durham, NC

- Developed a Python-based CLI tool that automated the retrieval of complex JSON data from a DNA sequencer RESTful API and project management data from a LIMS database, generating comprehensive reports for researchers. The tool replaced a manual process for evaluating key metrics, improved data delivery speed and user experience.
- Contributed to and developed an internal Python library that standardized logging compliant with organizational and FDA (21 CFR Part 11) regulations. Maintained a logging wrapper that ensured audit-ready logs with application inputs/outputs, and execution details (e.g., user, pipeline name, cluster node).
- Optimized CPU and memory management in a Linux HPC environment by configuring resource-intensive processes to dynamically adjust CPU allocation based on memory-related errors. Implemented limits to prevent resource contention, ensuring balanced compute availability across the network.
- Collaborated closely with internal users to understand their workflows, tailoring tools to support their data analysis and delivery needs. In particular, a Python-based data pipeline that converted raw data into structured text formats, parsed metadata, summarized key metrics, and generated user-friendly reports.
- Built an automated test framework for data pipelines using Bash Automated Testing System (BATS), executing functional test cases across an HPC cluster to ensure reliability.
- Collaborated with IT architects to align software projects with infrastructure requirements, obtaining approval from the Architectural Review Board (ARB) and adhering to best practices for software design and deployment.

- Partnered with subject-matter experts to gather user requirements for data workflows and tooling, translating needs into technical stories for feature development, optimizations, and issue resolution.
- Used Cruft to implement project templates using, standardize directory structures, containerization, and CI/CD processes. Ensured integration with existing IT architecture (e.g. compute cluster, network storage, cloud platforms, external systems like ELK stack).
- Guided a remote team of engineers by delegating technical tasks, conducting code reviews, promoting object-oriented software designs, setting code coverage thresholds during CI/CD in Azure DevOps (ADO), and sharing productivity techniques for tools like Github Copilot.
- Containerized pipeline software components by defining base images, environment variables, entry points, dependencies, and project setup in Dockerfiles, ensuring a consistent, isolated runtime environment deployable across diverse systems.

IQVIA | Software Engineer III

NOV 2019 – NOV 2021 | Durham, NC

- Configured ETL pipelines to send logs to an ELK stack for real-time visualization of application runtimes, error rates, and resource utilization. Enabled users to monitor performance, troubleshoot errors, and assess pipeline efficiency. Provided other stakeholders with insights into usage patterns and performance, creating an environment for data analysis and operational visibility.
- Documented all software, crafting clear and concise docstrings for functions, classes, and modules. Maintained internal documentation pages with build details and instructions for user acceptance testing. Authored official product documentation, including design and architecture specifications, and user manuals.
- Utilized Pandas, Matplotlib, and Bashplotlib to visualize the distribution of unmatched or missing data points (barcodes in this case) from large data sets (genomic data), enabling quick identification of patterns and potential issues.
- Utilized Python to manage large HTTP payloads by converting data into structured dataclasses, enabling efficient, type-safe data transformation and streamlined data access for analysis workflows.

IQVIA | Software Engineer II

OCT 2018 – NOV 2019 | Durham, NC

- Developed SQL data models to support data processing pipelines, designing data model classes for user and entity data and integrating them with a Flask front-end to streamline data management and improve user experience.

Circassia Pharmaceutical | Inside Sales Specialist
MAR 2017 – OCT 2018 | Durham, NC

- Assisted other team members during initial discussions with prospects by giving clear, concise explanations of disease biology and summaries of supporting research. Recognized as a product expert within the inside sales team.
- Collaborated with commercial operations to test and train team members on Salesforce cloud services focused on a new order entry system. This identified areas of improvement in the data entry process.

Robling Medical | Sales Engineer
FEB 2015 – AUG 2015 | Durham, NC

- Supported daily internal sales activities by building profitability models in excel for developing project quotes.

Polyzen Inc. | Sales Engineer and Project Manager
JUL 2009 – AUG 2014 | Durham, NC

- Acted as voice of the customer to business development and engineering teams, collaborated with engineering during the process development cycle and ensured product requirements and target deadlines were understood.
- Modeled manufacturing efficiency, production costs, and projected profitability in Excel. Organized all leads, quotes, and orders into CRM databases and produced weekly reports for management.

SOFTWARE PROJECTS

[Market Scout](#) - Python

- CLI tool for market research

SKILLS

Programming Languages and Frameworks

- Proficient in: Python
- Working knowledge of: Java, Groovy, Bash, Nextflow, C/C++

Tools and Technologies

- Cloud Platforms: AWS, Azure
- API: FastAPI, Flask
- Code Management: Docker, GIT, ADO, AWS, Gradle
- OS: Linux

EDUCATION

B.S. Biology

North Carolina State University