# Judah High, PhD – Senior Software Engineer

http://github.com/judahhigh | https://jhigh-portfolio.fly.dev/ | linkedin.com/in/judah-high

Software engineer with 7 years of experience in software engineering and 12 years of experience in software development. Passionate autodidact and a firm believer in the benefits of test-driven development.

## Core Competencies

- AWS data, software, DevOps engineering
- On-premises and cloud Kubernetes
- Event-driven cloud architectures
- Serverless cloud architectures
- Infrastructure as code (IaC)
- Full stack development
- Test-driven development (TDD)
- Behavior-driven development (BDD)
- Agile Scrum
- Continuous Integration / Continuous Delivery (CI/CD)
- DevOps
- Clean Code
- Quantum Chemistry
- Technical writing

## Work Experience

### Senior Software Engineer, 2/2024-current - Remote                                    Pearson

- Extended and maintained a key qualification and assessments web application serving thousands of global customers.
- Leveraged TDD in the creation of the product's 1st automated test suite with 500+ tests and counting.
- Re-engineered heavy frontend data processing mechanisms via a WASM layer to enhance frontend performance and security.
- Designed a cloud-based batch processing system on AWS to offload application instance processing for on-demand and CRON jobs interfacing with the data layer.
- Implemented various database optimization strategies to futureproof the web application's data requirements.
- Re-engineered backend processing functions through concurrency to improve performance by 6x.
- Pioneered the adoption of TypeScript on the frontend to promote error-tolerance and readability.
- Promoted the use of functional paradigms to alleviate code-complexity concerns and to promote effective error handling.
- Provided input on the application CI/CD design towards more fluid and confident product deliveries.
- Worked in a small team of 4 developers adhering to an Agile Scrum methodology.
- Currently averaging 504 lines of code changed per day.
- Key Technologies: AWS (Batch, CDK, CloudFront, Cognito, DynamoDB, ECR, ECS, EventBridge, Fargate, Glue, IAM, Lambda, S3, SecretsManager), Bootstrap, Go, JavaScript, MongoDB, Postmark, Sendgrid, Rust, TypeScript, VIM, VS Code, Vitest, Vue, WASM, aws-runas

### Principle Software Engineer, 2/2022-8/2023 - Remote                                    Agenus, Inc.

- Designed, developed, and maintained a suite of cloud-native clinical trial ETL data pipelines, web applications, and data exploration/analysis tools using primarily Python, Rust, Bash, and AWS cloud services through an IaC approach.
- Setup, configured, and maintained serverless cloud infrastructure to automate testing monitoring, integration, and delivery.
- Worked proactively with a small team of 3-5 individuals along with IT and internal customers.
- Developed service level agreements to ensure the nature and operation of each product delivered.
- Technical lead making major contributions on every project including the assistance and mentoring of junior developers.
- Worked in a fast-paced environment, delivering all products within 3-6 months.
- Took a design first, then TDD approach resulting in an automated test suite with thousands of regularly running tests.
- Averaged around 513 lines of code changed per day over the course of my employment.
- Key Technologies: Azure AD, Datadog, Docker, GitHub, Kubernetes, MySQL, PostgreSQL, Python (Black, Boto, FastAPI, Great Expectations, Mangum, Moto, Pytest, Tox, Pandas, PySpark), Rust (Polars, Rocket, Serde, Actix, GlueSQL, js-sys, WASM, wasm-bindgen, web-sys), TypeScript (AG Grid, React, Tailwind), AWS (Aurora, ALB, API Gateway, Athena, Batch, CDK, Cloud Formation, Codebuild, CodePipeline, CodeStar, Cognito, DynamoDB, ECR, EKS, Fargate, EventBridge, Glue, IAM, Lambda, Redshift, S3, SDK, SecretsManager, SQS, SSM, Step Functions), Conda, VS Code, VIM

### Staff Engineer II, 5/2017-1/2022 - Hybrid                                    Applied Research Associates

- Held clearance at the TS SCI level to perform government contract software engineering work.
- Designed, Implemented, and maintained a portfolio of software features and tools for a 30+ year physics-based simulation software product on a team of around 50 scientists, developers, and engineers.
- Solidified on-premises CI/CD infrastructure through TeamCity for all software products.
- Made frequent lasting contributions to a codebase comprised of millions of lines of code, primarily C++ and Python.
- Nominated and maintained status as a technical owner for sections of the codebase participating in design, maintenance, and review efforts.

- Mentored 10+ junior developers, engineers, and interns.
- Regularly presented and demoed major and minor software updates to staff and stakeholders.
- Created and maintained automated testing suites and reports to maintain the quality of the product and features delivered.
- Managed a large-scale effort (design, implementation, maintenance, budget, customer relations) for a specific product-line to enhance the primary physics-based simulation product.
- Developed and marketed new product lines equipped with capabilities sourced from my background in quantum chemistry.
- Awarded 3 technical achievement awards for contributions to existing and new products.
- Key Technologies: Bash, BitBucket, Boost, C++, C++ STL, Conda, D3, Django, Docker, Fortran, GitHub, Java, JavaScript, Jira, Kubernetes, MS Visual Studio, Python, PyTorch, Qt, scikit-learn, Spring, SQL, SWIG, TeamCity, Tensorflow, VS Code, VIM

**Research Assistant – Simulation Software, 8/2012-5/2017**                    North Carolina State University

- Designed, developed, and maintained software tools and services to enhance research efforts in the field of quantum chemistry primarily in C, C++, Fortran, Bash, and Python.
- Performed administration and maintenance operations for an on-prem supercomputing cluster.
- Mentored junior members in the research laboratory in pursuits of new research.
- Executed all developed tools and services in pursuit of a PhD in quantum chemistry, awarded May of 2017.
- Collaborated with research colleagues in several countries to develop new features in quantum chemistry software leveraged across multiple research veins (see publications as well as publications referencing my work).
- Key Technologies: Python, MPI4Py, Bash, Fortran, C, C++, scikit-learn, GitHub, Torque, LSF, XCode, VIM

## Education

- Quantum Chemistry, PhD, North Carolina State University
- ACS Certified Chemistry, B.S., Appalachian State University
- Forensic Science, B.S., Appalachian State University

## Publications

- High, J. S.; Rego L. G. C.; Jakubikova, E. *J. Phys. Chem. A*, **2016**, 120(41), 8075-8084.
- High, J. S.; Virgil, K. A.; Jakubikova, E. *J. Phys. Chem. A*, **2015**, 119(38), 9879-9888.

## Other Interests

- Powerlifting
- Skiing
- Hiking
- Motorcycles
- Hard Sci-fi
- Music Production
- Biking
- Cooking
- Home Reno