jonathan-lee-king

Jonathan King

Portfolio

Automation | Cloud | DevOps | Full-Stack | Modernization | Testing | Visualization

Top Secret with SCI Eligibility | 12+ years' experience | M.S. in Physics

Huntsville, Alabama, United States

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SUMMARY

Versatile and *solution-oriented* **Full-Stack Software Developer** with **over a decade of experience** driving innovation in complex system integration, data modernization, DevOps, and data visualization. Proven track record of architecting and delivering advanced software solutions for missile defense, scenario simulation, and analytical systems. ***Frequently recognized for pioneering approaches*** to tough technical challenges and making high-impact contributions to mission-critical defense initiatives.

- *Self-Starter with Ownership Mentality and Delivery Focus*
- *Proactive, Goal-Oriented Problem Solver with a Drive for Excellence*
- *Grounded in Execution with Extreme "Attention to Detail"*
- *Team-Oriented with a Passion for Working with Great People*
- *Meticulous and Imaginative with a Focus on Elegant Solutions*
- *"Idea-Factory" Mindset with a Drive to Inspire and Invent*

EXPERIENCE

Senior Full-Stack Software Developer — BlueHalo

Missile Defense Agency (MDA/BC) — April 2022 - July 2024, Huntsville, AL

- Supported MDA/BC in developing a framework that allowed multiple elements from the BMDS to be brought into a single application for scenario planning. The team met the original objectives defined in the Statement of Work (SOW) *1.5 years ahead of schedule*.
- Spearheaded onboarding new developers by writing comprehensive documentation, providing automation scripts, and routine pair programming.
- Automated the setup of new development environments for all developers, including the IDP Lab (Redstone Arsenal, Bldg. 5400).
- Built an unclassified Ubuntu 22 ISO with pre-configured software to support off-site development; significantly contributed to the corresponding classified ISO to ensure near-identical environments and *streamline cross-domain workflows*.
- Engineered and deployed *nightly automation scripts* at the customer site to support a ***Continuous Delivery*** pipeline, streamlining the routine delivery of GitLab repositories, Docker images, and npm packages with minimal manual intervention.
- Researched, optimized, and automated critical development workflows — including cluster backups, lint/build/test/deploy processes, GitLab CI/CD pipelines, hot-reloading of containerized deployments (nodemon, pm2, Tilt), Git hooks, and container orchestration - significantly boosting team velocity and development efficiency.
- Streamlined the Kubernetes release process by architecting a simplified API abstraction layer over cdk8s, reducing deployment complexity and improving maintainability across environments.
- Developed an interactive Kubernetes deployment tool enabling dynamic provisioning of base manifest files to both local (MicroK8s) and remote (AKS, DoD SAFE, physical delivery) clusters, facilitating consistent and repeatable multi-environment deployments.

Software Engineer IV — Penta Research, Inc.

Missile Defense National Team (MDNT) — February 2022 - March 2022, Huntsville, AL

- Supported Missile Defense National Team (MDNT) in a data modernization effort.
- Researched the extraction, standardization, and storage of large datasets using a relational database.
- Initial development towards a single source of truth for all tools to enhance data consistency and integrity.
  - *Overcame* the absence of a viable PDF parser (Node, Java, MATLAB) by creatively leveraging jQuery within Firefox Developer Tools to extract data, ***delivering a working solution in days for a task estimated to take 9+ months using traditional tooling***.

Small Business Innovation Research (SBIR) – Phases I, II, II Extension — January 2018 - March 2022, Huntsville, AL

- Supported multiple SBIRs for Jeremy Gneiting at U.S. Army DEVCOM Aviation & Missile Center (AvMC) and Tim McCarter (1st Edge) to streamline the scenario design process for MDA ground tests.
- Standardized data models across multiple organizations.
- Conducted research and development to assess AI/ML feasibility for scenario design.
- Developed single-page and multi-page web applications (ASP.NET Core, C#, TypeScript, jQuery, MS SQL Server, Neo4j, Telerik, D3, CesiumJS, SignalR) to showcase the underlying data models, capture Scenario Designers' SME knowledge, and automate portions of the design process.
- ***Derived*** *and implemented* a graph-theory-based greedy algorithm to reduce the number of required trajectories for scenario coverage - ***automating a workflow previously handled by a small team*** and *solving a technical challenge* that persisted for over a year.

US ARMY DEVCOM AvMC Rapid Scenario Prototyping (RaSP) January 2018 - February 2022, Huntsville, AL

- Supported Rapid Scenario Prototyping (RaSP) for Steven Carr (S3I) and David Jones (MDA/DTG).
- Spearheaded technology research and adoption, providing training to accelerate team proficiency in new tools and technologies.
- Initiated and led the lab's cloud migration effort by:
  - Repurposing an unused internal server running CentOS 7 into a Docker host to accelerate the lab's specified cloud readiness; this *self-directed* effort filled a critical infrastructure gap and enabled external stakeholders to *deliver containerized applications* ***in minutes rather than days*** — ***eliminating a multi-month stall*** in capability growth.
  - *Avoiding a critical productivity roadblock* during a *4-month period without a functional development workstation* by personally purchasing hardware, clustering rack-mounted servers at home, and *self-hosting* a secure Proxmox-based environment with Cloudflare, Nginx Proxy Manager, Let's Encrypt, etc. This system enabled the testing of infrastructure tools, validation of CentOS updates, preparation of terrain data for CesiumJS, and staging of commercial off-the-shelf software — *ensuring uninterrupted progress on high-priority projects without access to standard developer resources*.

Software Engineer III — Torch Technologies

Missile Defense Agency (MDA/TPO) August 2016 - January 2018, Huntsville, AL

- Supported MDA/TPO in building a virtual Terminal High Altitude Area Defense (THAAD) Skills Trainer (TST).
- Lead architect accountable for designing, building, testing, and integrating a Relational Database Management System (RDBMS) into TST.
- Led development of all backend services for the THAAD Skills Trainer, including a suite of custom JavaFX desktop applications that empowered SMEs, developers, artists, and leadership to input, configure, and manage system data efficiently.
- Created *automated* reverse-engineering tools for extracting data from THAAD's Interactive Electronic Technical Manual (IETM).
- Rebuilt the Task Allocation Matrix for the THAAD Program Office (TPO), completing a task previously deemed *impossible* by the customer.
- Primary developer corporate-wide for Microsoft HoloLens (augmented reality), focusing on research and development for warfighter training. Key projects included interactive, distributed AN/TYP-2 models, hardware/software integration, and object recognition built using Unity and C#.
  - Delivered live augmented reality *demonstrations* to a wide range of stakeholders — including *military leadership, congressional representatives, and THAAD operators* — showcasing advanced training capabilities and real-time system interaction.

Missile Defense Agency (MDA/DVS) July 2014 - August 2016, Huntsville, AL

- Supported MDA/DV/DVS for Richard Paladino in streamlining flight test analysis.
- Co-developed a situational awareness platform integrated with NASA WorldWind for real-time 3D visualization of telemetry data during flight tests, enhancing spatial understanding and real-time decision-making.
- **Mission Analysis Toolkit:** Developed a comprehensive toolkit for real-time and post-processed telemetry data recording, retransmission, visualization, and analysis across geographically distributed locations while ***bridging*** previously ***stove-piped tools*** on a common communication bus. ***Reduced analysis time from weeks to near-real-time,*** enabling immediate issue resolution and standardized reporting during events. *Received multiple commendations (see below)*.
  - *Personally contributed to every phase of the software development lifecycle (SDLC) for all toolkit applications.*
  - *Briefed Richard Matlock (Program Executive for Advanced Technology - MDA/DV), Joseph Keelon (Deputy Program Executive for Advanced Technology - MDA/DV), numerous SESs within MDA, General Atomics, and other contractor leadership.*
  - ***Asynchronous* MATLAB API:** Engineered a custom, multi-threaded asynchronous MATLAB API using Java (bypassing limitations of MathWorks' Parallel Computing Toolbox), enabling valid *real-time* data stream subscriptions - previously deemed *impossible* by senior-level Ph.D. scientists and engineers.
  - **Data Stream Manager API:** Developed an additional multi-threaded asynchronous MATLAB API (using Java) for aggregating and filtering high-volume telemetry streams, streamlining workflows, and reducing manual data preparation.
    - Achieved a ***30,000% performance boost*** by reducing MATLAB data plot generation time from ***20 minutes to 4 seconds*** - *one of many efficiency improvements delivered*.
  - **MDIOC Surrogate:** Developed a playback tool to emulate telemetry from previous flight tests, ***eliminating external dependencies*** and *saving significant resources*. Enabled comprehensive system verification, realistic simulations, and independent TCP/IP and UDP connectivity testing.
    - Provided critical diagnostic capabilities previously unavailable, *uncovering hidden connectivity issues* between MDA/DVS and MDIOC.
  - **Soft Router:** *Identified a critical gap* in real-time telemetry data routing and analysis capabilities. *Proposed, co-architected, implemented, and maintained* a robust, multi-threaded software router leveraging TCP/UDP sockets for data monitoring, recording, retransmission, and annotation across distributed environments.
    - Independently validated by multiple senior-level Ph.D. research scientists at Johns Hopkins University (JHU) Applied Physics Laboratory (APL); extensive peer review found ***zero defects***, demonstrating robustness and exceptional code quality.
    - Revealed critical system limitations, *directly inspiring the development of all other tools within the Mission Analysis Toolkit*.
  - Additional Tools and Automation:
    - **Deployment Pipeline:** *Automated* software build, packaging, and distribution across shared drives.
    - **Interactive Plot Generator:** *Streamlined* creation of custom dashboards for real-time and post-processed telemetry data.
    - **Time Conversion Tool:** Enabled *seamless* conversions between multiple mission-critical time standards (GPS, UTC).

Research Assistant / Teaching Assistant **Auburn University**
Allison Laboratory August 2012 - May 2014, Auburn, AL

- Assisted faculty in delivering undergraduate physics instruction, reinforcing core concepts through hands-on support and student interaction.
- Selected as *1 of only 4 students* to staff the Physics Help Room, delivering peer tutoring across a range of undergraduate physics curricula.
- Collaborated with the Computational Physics team by invitation, contributing to the development of advanced plasma physics algorithms for execution on Titan, Oak Ridge National Laboratory's high-performance supercomputer.

AWARDS & HONORS

Certificate of Achievement: "...providing exceptional service..."
Penta Research, Inc. (MDA/DTG) • 2022

*"Recognized for **providing exceptional service** in the last week of your tenure within the RaSP Lab."*

Certificate of Achievement: "Above and Beyond"
Penta Research, Inc. (1st Edge, LLC) • 2019

*"Recognized for your continued efforts going '**Above and Beyond**' supporting Penta's SBIR Customer."*

Informal Customer Commendation: Rebuilding the Task Allocation Matrix
Torch Technologies (MDA/TPO) • 2017

- Earned exceptional customer praise for engineering an end-to-end ETL (Extract, Transform, Load) solution that extracted data from technical sources, reshaped it for analysis, and populated the Task Allocation Matrix — successfully completing a task previously deemed *impossible* by the customer and enabled critical issue resolution.

Customer Commendation: "...deserve this recognition!"
Missile Defense Agency (MDA/DVS) • 2016

- Received group recognition from the former MDA Director, Vice Admiral James D. Syring, at an Awards Ceremony and through an agency-wide *"Communications Roundtable"* email.

"MDA ALL: Message From The Director -- All Hands Special Recognition

To the Men and Women of the Missile Defense Agency:

*We took time on Monday to give special recognition to individuals and teams who have **excelled in their jobs** and **truly made a difference within the Agency**. I would like to recognize a few **additional individuals** for their **outstanding achievements to both the Agency and their organizations.***

*Janet Fisher and the **Advanced Concept Assessment Analysis Team** in DV have **distinguished themselves** with their **outstanding work to prepare for, execute, and analyze the results from our Reaper campaign** during the January GM controlled test vehicle flight test (CTV-02+). Their work is establishing the analytical and empirical evidence necessary for us to expand the sensor grid options we can provide to the warfighter in the future...."*

- Received written commendation from MDA/DV/DVS Deputy Director Janet Fisher.

*"**Jonathan King**, one of your younger employees, is one of the critical team members who **really deserve this recognition!**"*

- In addition to the formal recognition, I received personal commendations from leadership across multiple organizations — including Johns Hopkins University (JHU) Applied Physics Laboratory (APL), General Atomics, Torch Technologies, MTSI, and senior MDA officials — ***who credited my contributions as critical to the mission's success*** and took time to personally acknowledge my impact in *one-on-one settings*.

CERTIFICATIONS

(In Progress) Security+
CompTIA • 2025

Fundamentals of Ballistic Missiles
Defense Intelligence Agency Missile and Space Intelligence Center • 2014

EDUCATION

Master of Science in Physics
Auburn University • Auburn, AL • 2014 • 3.3

- Concentration in Computational Theoretical Atomic Physics.
- Awarded full tuition waiver and annual stipend.
- Completed three doctoral courses while pursuing the master's out of a personal *passion* for the topic and a *desire* to deepen my understanding.

Bachelor of Science in Physics
Minor in Mathematics • University of North Alabama • Florence, AL • 2012 • 3.5

- Attained the highest GPA in physics coursework within the graduating class.
- Inducted into the National Physics Honor Society, Sigma Pi Sigma.
- Completed nearly all requirements for a Minor in Economics.

PUBLICATIONS

R-matrix with pseudostates study of single photon double ionization of endohedral Be and Mg atoms
Journal • Journal of Physics B: Atomic Molecular and Optical Physics • 2015

Atomic swelling upon compression
Journal • Journal of Physics B: Atomic Molecular and Optical Physics • 2012

Diffuse versus square-well confining potentials in modelling A@C60 atoms
Journal • Journal of Physics B: Atomic Molecular and Optical Physics • 2012

- Received numerous grants (NSF Grant No. PHY-0969386, DAMOP, Alabama Academy of Science) to present research findings.
  - Anaheim, California: 43rd Annual Meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP) Conference
  - Tuskegee, Alabama: Eighty-Ninth Annual Meeting of the Alabama Academy of Science, Inc.
- *As of 4/29/2025:* "Compared to all research items: This item's Research Interest Score is higher than 92% of research items on ResearchGate."

REFERENCES

Personal

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SKILLS

*** as a Service:**	Kasm (DaaS), Vercel (PaaS)
Artificial Intelligence (A.I.):	ChatGPT Plus v3+ (OpenAI API, Custom GPT's, Web), Claude Pro v2+, CrewAI, Cursor, Gemini v1+, Grok v1+ (X - Premium+), GitHub Copilot (2022+), GitHub Spark (2025+), Hugging Face, LM Studio (since prerelease), Microsoft Copilot *(formerly Bing Chat)*, Ollama
Cloud:	Cloudflare, Let's Encrypt, Nginx Proxy Manager, Traefik
Code Styling:	ESLint, Prettier, SonarLint
Databases:	Firebase, InfluxDB, Microsoft Access, Microsoft SQL Server, MySQL, Neo4j, PostgreSQL, SQLite
Development and Collaboration Tools:	Azure DevOps *(formerly Visual Studio Team Services (VSTS))*, Confluence, Jira, Mural
DevOps Tools:	cdk8s, Coroot, Docker, GitLab CI/CD Pipelines, Kubernetes, nodemon, pm2, Swarm, Tilt
Environments:	Agile (Scrum, Kanban), Earned Value Management (EVM), Waterfall
Frameworks:	.NET, ASP.NET (Core, MVC), Entity Framework, JavaFX, Swing, Windows Presentation Foundation (WPF)
Front-End Technologies:	Bootstrap, CSS, HTML, jQuery, React
Graphics and Visualization:	CesiumJS, D3, DataTables, NASA WorldWind, Telerik, Vuforia
IDEs:	Eclipse, SQL Server Management Studio (SSMS), Unity, Visual Studio, Visual Studio Code
Languages:	Bash, C#, Cypher, FORTRAN, Java, JavaScript, JSON, Markdown, MATLAB, SQL (inc. T-SQL), TypeScript, XML, YAML
Microservices and Architecture:	gRPC, Microservice Architecture, Nx (Monorepos), RabbitMQ, REST
Operating Systems:	Linux (CentOS, Proxmox Virtual Environment, Red Hat, Ubuntu (Desktop, Multipass, Server), Unraid), Windows
Others:	IIS, Mathematica, Microsoft 365, Microsoft Visio, Swagger
Paradigms:	Model-View-Controller (MVC), Model-View-View-Model (MVVM), Object Oriented Programming (OOP), Test Driven Development (TDD)
Protocols and Data Serialization:	Google (FlatBuffers, Protocol Buffers)
Scans:	ClamAV, Gemnasium, SonarQube, Trivy
Source Control Management:	Git, GitHub, GitLab, SVN
Testing Tools:	Ava, Chai, Jest, JUnit, Mocha, Moq, NCrunch, QuokkaJS, React Testing Library, WallabyJS, xUnit