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5205 Sundrop Court, Godfrey, IL 62035

Phone: [redacted]
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Current Security Clearance: Top Secret
SSBI Date: 2005, 2010, 2020/2021

Current Treasury Clearance: High
Date: 2022

PROFESSIONAL SUMMARY

- Lead and perform system engineering on complex systems to include modeling, simulation, and optimization (AI/ML); analytics and statistics; and architectural design and implementation.
- Lead and design, analyze, implement, test, document, maintain and assure the quality and security of complex cloud services, web and desktop software systems.
- Lead, design, and implement relational and structured/non-structured database management systems, including performance tuning and maintaining operational availability and data integrity for development, master data, administrative and end-user databases.
- Lead the execution of complex business solution initiatives; direct Program Managers and Engineering Leads in the execution of responsibilities; and provide oversight, management and direction to employees and vendors.
- Develop and improve processes to enable consistent and measurable implementation; perform contract management; develop proposals, statements of work, and cost estimates.
- Experienced with frequent briefing of C-level/President, Board, GS-15, SES, General Officer and international audiences.

TECHNICAL SKILLS

- Python, PHP, Perl, JavaScript/TypeScript, Node.js, C#.NET, Java, Fortran, ActionScript, Visual Basic
- Multiple Python data science libraries, Node.js, React, d3.js, developed the MOUSE PHP FOSS library.
- REST, RPC; SOAP, XML, JSON
- Amazon Web Services (e.g., EC2, S3, RDS, SQS, SNS, STS, ECS, CloudWatch, Lambda, etc.)
- R (and multiple libraries), MATLAB, Octave, Tableau, Cognos BI, CloudPak for Data, Pentaho ETL/BI
- SQL, Oracle PL/SQL, Microsoft Transact-SQL
- Oracle RDBMS; Microsoft SQL Server; MySQL, PostgreSQL; CouchDB; MongoDB
- Physical and Virtual Network, PC, and Server component installation, configuration, and servicing (Windows and Linux); Containers (Docker)
- Extensive Agile, Lean Six Sigma, User Experience (UX), Systems and Process Engineering experience.
- Microsoft Office Products (including Project and Visio), Microsoft Developer's Studio

PROFESSIONAL EXPERIENCE

Federal Reserve Bank of St. Louis, St. Louis, MO **Jun 2022 - present**
Department Senior Manager

- Manages, advises, and supports multiple teams of highly skilled engineers including both staff and contractors in both a hybrid and remote capacity.
- Provides recommendations on architecture, process, implementation, and continuous improvement methods to teams and VP leadership.
- Oversees the development, deployment, and automated testing of two Department of the Treasury applications. Represent the technology teams to Treasury and FRB officers.

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- Develops and updates documentation for auditable processes, for technical guidance, and as a part of Department of the Treasury deliverables.
- Rebuilt a team of monoglot developers working on an on-prem software solution into a team of full-stack developers. Provided directed team guidance to include a jump-start learning plan for leadership, management team, and developers including AWS training videos.
- Serves as team architect for conversion of a monolithic solution into a scalable, resilient cloud solution using independent web-service images and a front-end running on ECS. Migrated from on-prem Oracle solution to RDS PostgreSQL. Accommodated a third party product running on EKS. Solution also includes ALB, WAF, S3, Fargate, SNS, KMS, Secrets Manager, and Lambdas.
- Full solution is creatable/destroyable via TypeScript CDK scripts executed in GitLab runners.
- Team successes:
    - Successful first migration for FRB STL of a full-stack, on-premise Java/Oracle application to AWS GovCloud with coincident migration to PostgreSQL with an Angular web front end.
    - Successfully migrated IdAM providers for two programs from SiteMinder to the Bureau of Fiscal Service's CAIA (Common Approach to Identity and Access) solution.
    - Establishment and delivery of lessons learned and architectural patterns to other FRB Treasury program departments in both documented and presentation of cloud migration experiences.
    - Solution is in Production and scheduled to go live SEPT 2023. Total time of lift from on-prem to AWS GovCloud go-live: 1 year.

United States Air Force, USTRANSCOM, Scott AFB **Jun 2021 - Jun 2022**
Chief Technologist, Operations Research/Systems Analysis

- Serves as a subject matter expert (SME) for statistics, multivariate statistical analysis, machine learning, artificial intelligence, data science, operations research, computer analysis, master data management, and data visualization.
- Serves as a coordinator to promote inter-division and inter-activity cooperative efforts in the management, utilization and operation of advanced analytic products.
- Designs and implements cloud native (AWS) solutions to support large scale AI/ML capabilities.
- Acts as liaison between team and supervisor/management.
- Delivers written status updates, formal technical reports, and briefings to superiors and senior level executive officials.
- Team successes:
    - Deployed a cloud-native, autoscaling, data analytics environment within Amazon Web Services capable of supporting a team of 20+ data scientists, complex analytical processes presented as AI-as-a-Service, and the execution of artificial intelligence tasks across multiple server swarms into production.
    - Infrastructure buildout converted to CloudFormation scripts.

Peraton (formerly Northrop Grumman), Scott AFB **Oct 2018 - Jun 2021**
Technical Lead, Staff Data Scientist, Enterprise Data Sciences

- Lead junior and senior data scientists and serve as the Government's initial focal point for the USTRANSCOM Joint Distribution Process Analysis Center's Enterprise Data Science team.
- Provide overall management for analytic solution sets to include evaluation of project scope, status, timelines, delivery schedules, and tasks associated with successful project completion.
- Provide expertise to data scientists in the design and development of advanced algorithms and, where required, assist in the preparation of an environment for operational deployment.
- Hands-on design and implementation of resilient, autoscaling AI/ML Enterprise Data Science workbench in USTRANSCOM's limited version of AWS GovCloud.

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- Used an SQS-based workload management process to drive discrete data-parallelization (Spark clusters were not approved at the time) and task-parallelization across autoscaling EC2 instance swarm (Fargate was not approved for use at the time).
- MySQL RDS instance was made up of a single primary DB (for writes) and 3 read replicas. One replica was used by the web services for execution, one replica to be used by reporting tools, and the last replica to be used for backups and tertiary monitoring.
- Developed well-defined APIs for the SQS-fronted Python web services (API Gateway was not approved for use at the time) for the execution of over 100 discrete ETL processes and AI/ML algorithms.
- Developed eight AI/ML forecasting models (Support Vector Machine, Prophet, ARIMA-S, Random Forest, TBATS, Simple Moving Average, LSTM-NN, Simple Exponential Smoothing) with Gaussian optimized hyperparameters and associated ETL processes to determine future airlift/sealift demand.
- Lead teams to perform the following functions:
  - Collect large sets of data and apply advanced techniques for curation via ETL to ensure the data is reliable and of high quality for the targeted purpose. Interpret large amounts of data with advanced approaches using sophisticated analytical and data visualization software or tools to discover patterns of the data. Discover, investigate, and visualize data trends and patterns to assist users across the enterprise in creating a robust and comprehensive data environment.
  - Research and develop statistical learning models for complex data problems to identify opportunities through various advanced statistical, mining, algorithmic, and visualization techniques or more advanced methods such as artificial intelligence and machine learning.
  - Develop iterative processes to maintain quality and performance of statistical models and quickly identify enhancements opportunities.
- Team successes:
  - Exercised and updated the USTRANSCOM Data Science Delivery Method (based upon the Microsoft Data Analytics Lifecycle). Developed and exercised the USTRANSCOM Use Case Methodology for analyzing key criteria in workload submissions to expedite prioritization.
  - Implemented 8 forecasting, 3 ensemble, and 19 evaluation methods in support of the USTRANSCOM Enterprise Data Sciences endeavor. Developed an automated forecast assessment algorithm for identifying the preferred model using a combination of error, trend, and periodicity. Plain-english narratives were developed to describe variations between aggregation metadata and temporally-staggered forecast metadata.
  - Developed 10 classification methods capable of accepting one to many factors. Factors are evaluated via Shapley values and SHAP clustering.
  - Developed a graph optimization methodology for estimating deployment and distribution of personnel and materiel across static and dynamic networks.
  - Developed a cloud-native, autoscaling, data analytics environment within Amazon Web Services capable of supporting a team of 20+ data scientists, complex analytical processes presented as AI-as-a-Service, and the execution of artificial intelligence tasks across multiple server swarms.

Charter Communications, St. Louis, MO **Mar 2018 - Oct 2018**

Senior Manager, Billing Integration Solutions

- Gather, report, review and monitor performance metrics of team; determine best courses of action and resource allocation in order to complete tasks; manage cross functional teams and external vendors to implement solutions; and onboard, offboard, mentor, train, and discipline team members as required.
- Conduct ad-hoc investigations based on requests from Internal Audit, Accounting, Finance, Marketing, and Operations; lead the creation of data analyses to identify, quantify and monitor billing discrepancies; and develop reporting to track project success and communicate results.

- Identify process gaps and issues; provide recommendations for areas of improvement in policies or procedures; partner closely with the Billing Operations, Billing Design, Marketing, Care, Field Operations and other teams to identify and rectify billing issues; and partner with Business Intelligence teams to drive additional value to the business.

MITRE Center for National Security, St. Louis, MO **Dec 2012 - Mar 2018**

Deputy Chief Technology Integrator, Lead Engineer

- Worked with Air Combat Command on the technical analysis and architecture of an aircraft-deployable, mesh network that could self-process, co-process with other frames (air, land, or sea), or send all work off to other frames for processing. This Future Tactical Cloud principally focused on the disconnected and connected states of the solution, the deconfliction and aggregation of signals/states, enumeration of the basic essential services underpinning the architecture, and communications.
- On behalf of USTRANSCOM J5/4, we performed analysis on historical mission data in order to develop a process and software prototype capable of forecasting the annual USTRANSCOM air transportation demand. Led operations researchers, subject matter experts, and software engineers in component analysis, trend analysis, ARIMA forecast analysis, and development efforts.
- On behalf of the Defense Personal Property System (DPS; 800k+ users) program, we developed a hybrid-cloud solution to offset the high-bandwidth bot software utilized by transportation service providers (TSP) to gain an edge on their competitors. In order to remove the screen-scraping bots, we utilized a push technology alternative using AWS SQS to provide the minimum data required to perform their function. Logic was developed with Node.js running in EC2. We also provided a web-based user interface (PHP) running in EC2 for demonstration purposes. Storage was managed via RDS (MySQL). The six-week effort led to the development of a performance work statement (PWS) for the purposes of hiring a contractor to perform the production development of the prototype. Reported status and provided recommendations at the GS-14, GS-15, and O-5 levels.
- Operated as the Technical Manager and Lead Systems Engineer for the Single Mobility System (SMS; 21,000 users), Coalition Mobility System (CMS; 200 US and international users), and Events Logbook (ELB; 2000 users) programs on behalf of the US Transportation Command (USTRANSCOM) Program Executive Officer (PEO). Oversaw and directed the efforts (on behalf of the Government) of three development teams and associated system administrators. Designed and developed software systems and applications for enhancements and new products; conducted research in design, development, testing and utilization of computer hardware and software; and conducted operational, architecture and impact analysis spanning both software and hardware architectures. Reported status and provided recommendations at the GS-14, GS-15, SES, Brigadier General, and Major General levels.
- On behalf of the Joint Distribution Planning and Analysis Center (JDPAC) in USTRANSCOM developed system simulation frameworks, performance models and algorithms and used mathematical modeling to arrive at optimal or near optimal solutions to complex problems. Delivered autonomous bulk data cleansing ETL system and analytics platform capable of processing large batches (100+ GB) of Military Flight Operations Quality Assurance data to A9 Fuel Efficiency Office. Reported results to GS-15 and SES levels.
- On behalf of Air Mobility Command (AMC) analyzed, acquired, designed, developed, installed, programmed, tested, and integrated leading edge, uninterrupted information technology systems, including software development, programming, PC and mobile application analysis, networks and systems integration. Provided recommendations to a large, remotely-located development team. Reported results to GS-13 and GS-14 levels.

Tapestry Solutions, Inc. (a wholly-owned subsidiary of Boeing)
(formerly Federated Software Group), St. Louis, MO **Feb 2005 – Dec 2012**
Enterprise Architect, Senior Technical Fellow

- Provide technical leadership to engineering staff in support of all software development programs. Serve as a technical resource for lead program engineers, design leads, and developers. Assist in evaluating technical resource requirements and in constraining solutions. Report program progress and issues to the CTO as a key member in the Technical Chain of direction for the corporation. Provide connection between technical, project management, and functional sides of the company by detailing requirements and assisting the staff in translating functional requirements into development tasks.
- Responsible for the technical oversight and direction of multiple programs composed of over 40 engineers and totaling in excess of $7.5 million annually. Assist Senior Director of Strategic Programs with staffing decisions, interviewing, and hiring. Present corporate technology goals and status to engineering, functional, and program management teams.
- Serve as Technical Lead for CMS (Coalition Mobility System) during the v0.3 through v1.0 development and deployment cycle. Responded to inquiries regarding contracts and labor estimates. Responded to RFIs/RFPs. Formally interfaced weekly with PMO team. Successfully met all IA requirements and achieved USTRANSCOM's first ATO of a military program deployed in a commercial environment (AWS). Utilized C#.NET and Microsoft SQL Server.
- Served as Senior Developer for SMS (Single Mobility System) using Perl and Oracle DB Server.
- Secure design, analysis, implementation, test, documentation, operational maintenance, training (CMS), and quality assurance of SMS and CMS using government and industry standards to meet the requirements of the client as outlined by Software Requirements Documents within specified time constraints.
- Design, implementation, and administration of relational database management systems, including performance tuning and maintaining operational availability and data integrity for development, administrative and end-user databases (Oracle and SQL Server).
- Performed data analysis, master data management, and data optimizations for the automated identification of: global transportation leading indicators and a maximal speed, minimal cost transportation alternatives recommendation system.
- Designing and implementing application components in the areas of relational data exchange, graphical user interfaces, and inter-process and network communications.

Metaphore Pharmaceuticals, St. Louis, MO **Jan 2004 - Feb 2005**
Manager of Analytics and Informatics Programs

- Planned and implemented a network upgrade from one NT domain server to a multidimensional informatics system (one Windows 2003 domain/Exchange Server, one SQL Server, one Windows 2003 file and print server, and an automated backup server).
- Constructed a proprietary database (SQL Server) of assay and compound data for mining and hit-to-lead tracking. Developed software to populate, mine, and visualize results from databases.
- Performed biostatistical analysis of animal model and human clinical samples to assist with efficacy studies. Performed chemoinformatical analysis (with multivariate linear regression) of multiple drug candidates to predict toxicity and efficacy profiles.
- Directed and assisted analytical staff in the development and execution of physicochemical and pharmacokinetic analytics and bioanalytics using UV, HPLC, and HPLC-MS instrumentation.
- Directed contract research organizations in the development and execution of analyses specific to Metaphore's unique class of compounds. Collaborated with and advised synthetic, pharmacology, development, and clinical teams as well as contract research organizations.

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Apath, LLC, St. Louis, MO **Jul 2001 - Jan 2004**
Manager of Medicinal Chemistry Programs

- Developed multiple software programs (VB) for data reduction of high-throughput screening results and hit-picking; for interfacing a number of instruments and detectors (UV/Vis, Luminometry, RT-PCR) and reducing assays to their qualitative and statistical results; for partial least squares and statistical analyses; and for routine data and record conversion.
- Constructed proprietary databases (ISIS/Oracle/SQL Server/Access) of assay and compound data for mining and hit-to-lead tracking. Developed the software to populate, mine, and visualize results from these databases.
- Researched, prioritized, acquired, and managed compounds and compound libraries for the advancement of Apath's antiviral programs. Applied principles of medicinal chemistry to further the development of lead compound classes having antiviral activity (i.e. SAR and QSAR).
- Assisted in the direction of viral (Hepatitis C, Respiratory Syncytial, West Nile, Yellow Fever, and Ebola, among others) and toxicity (cytotoxicity, genotoxicity, and redox regulation, among others) development and screening.
- Performed competitive intelligence of companies pursuing hepatitis, respiratory syncytial, yellow fever, and sindbis virus inhibition. Created databases detailing current literature and patent estate, and sourced identical compounds or relevant surrogates for testing.
- Participated in the development and execution of assays (ELISA) designed to quantitate chemical inhibition of Hepatitis C viral replicon in human hepatocytes.

Pharmacia Discovery Research (formerly Monsanto/Searle), St. Louis, MO Feb 1994 - Jun 2001
Senior Research Chemist

- Managed robotics and analytical facilities for the Combinatorial Chemistry Group. Tasks included planning and layout, maintenance, and operation of HP 1100 LC/MS, Gilson sampler/collectors and LC system, Tecan liquid handling system, FlashMaster parallel purification system, AmeriChrom Prep-LC system, etc.
- Performed Quantitative Structure/Activity Relationship (QSAR) small molecule toxicity/efficacy profile prediction through multiple feature selection and both linear and non-linear (sigmoidal) regression.
- Developed and operated assays to explore the physicochemical properties of tissue factor VIIa inhibitors (logP, artificial membrane affinity, and so forth). Frequently utilized NMR, LC and LC/MS, TLC and elemental analysis (performed by an outside source) to verify product structures and purities.
- Participated in basic and applied research into the development of inhibitors for the Tissue Factor/Factor VIIa enzyme.
- Gained experience in Solid Phase Organic Synthesis (SPOS) and Polymer-Assisted Solution Phase Chemistry (PASP). Utilized parallel synthetic techniques to couple cores and peripherals.
- Operated in small scale to prep scale reaction quantities. Performed small-scale purifications with a Gilson SemiPrep and prep scale purifications with Prep500s, a Biotage, and an Americhrome LC.

EDUCATION

M.S., Bioinorganic Chemistry, Southern Illinois University - Edwardsville, 1994
B.A., Chemistry, Southern Illinois University - Edwardsville, 1992