



Artificial Intelligence

Innovation, Integration, and Transformation

Around the world, organizations are using artificial intelligence (AI) to deliver new solutions to solve challenges, automate repetitive tasks, improve the customer experience, and increase efficiency. As AI-driven applications have become more widely available, accessible, and affordable, their use has extended beyond the private sector to government, the military, educational institutions, nonprofits, and many others. Organizations interested in becoming part of the AI revolution should think beyond one-off AI solutions. They need to develop an AI mindset. This means infusing AI awareness and its transformative power throughout all parts of the organization.

Maximus leverages a holistic, agile, secure, and customer-centered approach to digital transformation. Powered by extreme automation, we help our clients solve their most pressing problems and advance their missions through the implementation of innovative AI solutions. Our approach to delivering AI and other leading-edge technology capabilities to our clients is built on agile and DevOps principles, enabling us to develop small but impactful units of functionality, and rapidly deliver them into the hands of users.

Representative Experience

High Performance Computing for AI



We developed and launched a specialized high performance computing cluster to support mission needs relating to machine learning, data mining, and advanced analytics for a federal agency client. This effort included designing, building, commissioning, and operating the highly advanced computing cluster, as well as supporting the user base with needs relating to code generation, modification, and interfacing with the machine. The initial cluster applied machine learning and advanced analytics techniques to data from tens of thousands of hydraulically fractured wells to improve efficiency of fracking processes, while reducing negative environmental impacts. Future problems under consideration for use of the cluster include application of machine learning techniques to accelerate the simulation of fluid dynamics and chemical reactions occurring in coal gasifiers, and the use of machine learning and advanced analytics to manage and obtain deeper insights from large geospatial data sets. Also under consideration is the ability to provide cybersecurity personnel with access to the cluster for simulations, analysis and predictive modeling relating to cybersecurity.

Robotic Process Automation



In order to improve and automate a federal agency's contact call center operations, Maximus implemented a prototype Robotic Process Automation (RPA) solution. Using this RPA technology, we built a process automation "bot" that resides on the call center agent's workstation and is triggered when needed by direct end-user control. The attended bot operates in the background while the staff continues with uninterrupted work, allowing for higher productivity, efficiency, and faster response time, thereby reducing call handling times in call center activities. Our RPA prototype implementation reduced response time 90%, from 20 seconds to less than 2 seconds, thereby enabling call center agents to more rapidly respond to callers without needing to pause for data to be manually handled. It also eliminated errors and inaccuracies in caller information previously caused by manual data entry and data transfer. This improved the customer experience and ensured that 100% of the call history of repeat callers is populated in the agency's CRM system.

AI Algorithms



To support biomedical cancer research at a federal health agency, Maximus applied AI techniques in support of bioinformatics, and played an instrumental role in orchestrating system automation and developing analysis pipelines to allow researchers to perform research based on sophisticated learning tools and algorithms. As cancer research data sets are extremely large and complex, AI techniques are needed to efficiently and effectively develop deep-level understanding from the huge volumes of data produced by the analysis of large genomes. Maximus researched, conducted analysis, and provided recommendations on relevant AI software to deploy, in order to accelerate cancer genomic analysis. In advance of this deployment, we assessed alternative tools that employ AI algorithms to significantly accelerate RNA sequencing analysis. We also assisted the agency by recommending the use of AI-based tools for capabilities beyond RNA sequencing, in areas such as pathogen detection and gene prediction. The unique combination of IT services, coupled with our highly technical subject matter experts in domain science, bioinformatics, and AI, helped our clients to advance the state-of-the-art bioinformatics.

Data Visualization and Machine Learning



Maximus developed methods to use artificial intelligence to further the mission of the Centers for Disease Control's National Institute of Occupational Safety and Health by improving the current occupational injury surveillance system and identifying risk factors for work-related musculoskeletal disorders. Using data from the U.S. Occupational Resource Network and the Ohio Bureau of Workers' Compensation, we are conducting a Classification and Regression Tree (CART) analysis to characterize risk factors for claim frequency and claim costs associated with musculoskeletal disorders in these linked databases. We developed data visualization, machine learning and AI toolkits to compare different machine learning models results to screen and preprocess data by comparing different model's accuracy and efficiency. The result is a quicker and more accurate visual representation that enabled researchers to better identify risks and make appropriate recommendations.

One Focus, One Source

Maximus is entirely focused on *Helping Government Serve the People*®. For decades, we have helped federal agencies run large, complex programs by leveraging the right people, process, and technology to deliver a full life cycle of services for mission success. We deliver a wide range of business operations and technology services to meet evolving citizen and agency requirements, ensuring outcomes and results that connect citizens more effectively with government services.