

Mission: Artificial Intelligence Research and Development

Stottler Henke Associates, Inc. (SHAI) is an artificial intelligence (AI) firm founded in 1988. Stottler Henke applies artificial intelligence and other advanced software technologies to solve problems that defy solution using traditional approaches. Stottler Henke exclusively works on AI and machine learning (ML) projects and has successfully completed over 700 AI projects to date. Across our offices we have a total of 50 employees with expertise spanning the spectrum of AI subdomains, including: Machine Learning; Computer Vision; Deliberation, Planning and Acting; Autonomous Agents and Robots; Multi-Agent Systems; Knowledge Representation; Natural Language Processing; and Cognitive Modeling. Our projects have predominantly focused on significantly improving capabilities for **Tactical Planning and Scheduling, Autonomous Systems, Decision Support, and Adaptive Training** across all domains including Space, Air, Surface, Subsurface, Ground, and Cyber.

Clients:

- National Aeronautics and Space Administration (NASA)
- Department of Commerce
- Department of Education
- National Institutes of Health (NIH)
- National Science Foundation (NSF)
- U.S. Air Force
- U.S. Army
- U.S. Navy

Technology Expertise:

In the course of its project work, the company has built several toolkits that it has used to streamline the development of intelligent systems—and, seeing an opportunity, has then packaged them as standalone commercial products, creating a new revenue stream and an opening to new markets.

Stottler Henke selects and applies the most effective combination of techniques to address our clients' individual needs: planning and scheduling, case-based reasoning, model-based reasoning, machine learning, computer vision, Bayesian networks, constraint satisfaction, adaptive training systems, data mining, etc. Stottler Henke combines this AI expertise with broad skills in database design and application development, data visualization, object-oriented software development, statistical and time-series data analysis, and graphical user interface design.

Due to the company's expertise spanning a wide range of AI techniques, which it often customizes or combines in unique ways for each specific client, and its ability to see new commercial market opportunities, Stottler Henke has been profitable since its inception, and it has never sought outside investment. The company has grown from two to 50 people since 1988. In a White House ceremony, it received the Tibbetts Award for outstanding technical excellence and innovation.

Solutions:

Stottler Henke systems assist organizations with scheduling operations and allocate resources more effectively; train their employees more quickly and cost effectively; capture and apply institutional knowledge; improve decision making; and effectively develop intelligent software systems.

Stottler Henke

Smarter Software Solutions

- **Tactical Planning and Scheduling** automatically solves scheduling problems which are too difficult for traditional optimization or dispatch rule techniques. Tactical situations require very good resource allocations very quickly. Compared to manual methods, intelligent scheduling lets you create schedules much more quickly, as well as run “what-if” studies to assess alternate scenarios.
- **Autonomous Systems** perform tasks and pursue goals in dynamic environments with little or no direct control by humans by sensing their environment and themselves, maintaining situation awareness based on this data, planning appropriately, and executing plans while reacting continuously to environmental and internal states.
- **Decision Support Systems** help people assess situations, analyze information, and make predictions or decisions in areas such as equipment diagnosis, planning, and design. These systems apply the knowledge of experts, encoded as heuristic rules, computational models, or experiences.
- **Situated Adaptive Training Systems** provide the benefits of one-on-one training automatically and cost-effectively. These systems encode the subject matter and teaching expertise of experienced instructors using artificial intelligence (AI) software technologies and cognitive psychology models, which lead to demonstrable improvements in learning as well as reducing training costs.

Products:

SimBionic®, a now open-source tool that speeds and simplifies the process of specifying intelligent monitoring and control behaviors within simulations, games, and real-time systems, without programming. Stottler Henke created SimBionic while building intelligent training systems for the U.S. Navy and Air Force. SimBionic is used by commercial training system developers and computer game designers who need to build extremely advanced simulations quickly and cost-effectively.

Aurora™, a sophisticated scheduling system that combines a variety of scheduling techniques, intelligent conflict resolution, and decision support to make scheduling faster and easier.

DataMontage™, a set Java software library that enables rapid visual analysis of complex, time-oriented data.

ReadOn!™, an intelligent tutoring system that teaches reading comprehension skills to adults by assessing and diagnosing each student’s specific reading skill deficiencies and tailoring its instructions accordingly.

The Task Tutor Toolkit™, a set of Java software libraries and applications that let you create intelligent tutoring system scenarios quickly and easily without programming.

The SimVentive™ system, which provides all the tools you need to quickly create complete, Java-based training games and simulations.

TaskGuide™, which enables organizations to rapidly develop intelligent, electronic job aids that help users carry out complex procedural tasks quickly and accurately.

Founded: 1988

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