![Searidge Technologies logo]

ARTIFICIAL
INTELLIGENCE IN ATM

Unlike specific technologies and systems like RADAR, ADS-B or e-Strips, Artificial Intelligence (AI) is a flexible technology with a diverse set of applications, allowing it to be applied to numerous ATC systems. AI can enhance any ATC-related task from management and training through operations and maintenance. And despite the widespread applicability, the single greatest impact AI might have on air traffic control in the near future is changing the way technology is deployed - dramatically shortening the cycle from idea to in-service implementation.

AIMEE: THE SEARIDGE AI ASSISTANT

Searidge has been working with AI for several years with its' vision processing/remote tower technology. AIMEE is the Searidge advanced AI framework for the development of artificial neural network-based solutions for air traffic control and airports.

AIMEE has been developed to greatly simplify the configuration and training of artificial neural networks with large and complex data sets; to allow the continuous evaluation and testing of output, and most importantly, to predict and certify performance within a safety critical context.

AIMEE's internal structure allows the system to not only handle all types of input data, but also to learn to help solve a diverse range of problems that today's ATCO face. Inherently, AIMEE has the capacity to generalize concepts from comparatively small training sets, recognize patterns in previously unseen scenarios and ultimately make predictions about the real world with a high degree of confidence.

At-a-Glance

+ The algorithm is learned, not designed
+ Non-technical users can develop AI solutions
+ Output confidence is provided
+ Noise resilience by design
+ Potential to speed up system development
+ Recognizes patterns in enormous amounts of data at speeds that greatly surpass human capabilities
+ Ability to simultaneously process data from different sources such as video sensors, ATC radio, ADS-B, and airport operations systems to identify patterns
+ Helps controllers and operators make more informed decisions
+ Not a replacement for human control
+ Alerts ATC stakeholders about potential incidents before they happen by comparing data
+ Enables easy development and implementation of new operational solutions that enhance safety and improve efficiency

The AIMEE platform offers all necessary tools for recording data, training the neural network and running the neural network in a real-time environment. By making this tooling available and easy to use, airports now have the ability to train and develop applications alongside their own neural network with AIMEE. Airports are able to harness the power of AIMEE and its extensive, and growing library of sampled and annotated data.

searidgetech.com

AIMEE IN ACTION

Artificial Intelligence is enabling a new tier of applications across all of aviation. With AIMEE we are making it easy for our customers to conceive, develop and implement new operational solutions that enhance safety and improve efficiency.

Searidge is working with leading ANSPs and airports on AI initiatives around the world including UAE, UK, Hong Kong and Singapore.

HOLD LINE SURVEILLANCE

In a pioneering trial at Heathrow Airport (LHR), AIMEE will be used to help regain the 20% in lost traffic capacity caused by low cloud and reduced visibility. By mounting cameras at ground level facing runway exits, AIMEE will hae full visibility of the aircraft. AIMEE uses advanced AI segmentation algorithms to determine the aircraft positioning and informs the end user when the aircraft clears the key thresholds.

BENEFITS:
+ Operational resilience
+ Increase arrival capacity
+ Reduce fuel burn and emissions

REMOTE DE-ICING

Using the AIMEE visual processing engine, Searidge and JCAII provide a state-of-the-art automated de-icing marshalling system to Chicago O'Hare (ORD) and Calgary International (YYC) Airports. Combining the power of AIMEE with cameras installed around the de-icing bays, we are able to detect aircraft in real-time and not only automate but further enhance the de-icing process.

BENEFITS:
+ Increase efficiency and accuracy
+ Reduce operator workload
+ Increase throughput

GATE MANAGEMENT

At Fort Lauderdale-Hollywood International Airport (FLL), Searidge has installed a vast array of cameras providing substantial coverage of the airport surface. AIMEE crunches this data employing advanced object detection, recognition and classification in its artificial neural network to detect aircraft at the gates. The system then uses these aircraft detections and their proximity to the airport gates to provide FLL staff with gate statuses for virtually all the gates.

BENEFITS:
+ Automatic gate occupancy detection
+ Integration with the airport FIDS
+ Remote apron management
+ Enhance situation awareness

SMART STAND MANAGEMENT

AIMEE enables dynamic stand management; advising controllers of optimal resource allocation in real-time by learning from historic, live and scheduled operational data. AIMEE is able to recognize a range of aircraft turn-around events, such as aircraft block on/off, service vehicle arrival/departure, and cargo and passenger onloading/offloading.

BENEFITS:
+ Real-time gate turnaround event detection and timestamping
+ Improve on-time performance
+ Optimize available infrastructure
+ Reduce controller workload
+ Predict delays before they impact performance

ARTIFICIAL INTELLIGENCE

SEARIDGE
TECHNOLOGIES

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