

Airport Scheduling: Resource Planning & Dispatching Optimization

Reinforcement Learning in Airport Operations

Industry Context: The Complexity of Modern Airports

Airports operate as some of the most complex industrial ecosystems. Synchronizing thousands of moving parts every day, from passengers and baggage to vehicles and workforce.

At the crossroads of precision, punctuality, and efficiency, operators now face unprecedented challenges: surging passenger volumes, labor shortages, and fragmented planning systems all under pressure to deliver operational excellence at controlled cost.

The Challenge: When Complexity Outgrows Human Planning

At Frankfurt Airport alone, over 1,000 daily flight movements trigger more than 10,000 ground handling assignments, requiring the coordination of 1,200 staff across 80 qualifications.

Traditional scheduling systems, often static, rule-based, and manually updated, cannot keep up with the dynamic nature of real-time disruptions, from delays to last-minute changes.

The result?

- Costly inefficiencies,
- delayed turnarounds,
- and dissatisfied passengers

Our Edge: Reinforcement Learning Meets the Airport

InstaDeep and Fraport Group have partnered to build an AI-powered scheduling and dispatching agent capable of learning, predicting, and acting autonomously.

Powered by Deep Reinforcement Learning, the system continuously adapts to live conditions, redistributing resources, optimizing sequences, and preventing bottlenecks before they even occur.

Potential Value:

- **Operational Excellence:** Prevented aircraft handling delays and improved resource utilization.
- **Cost Reduction:** Expected seven-digit annual savings through automation of dispatch and planning.
- **Customer Satisfaction:** Prevented “Left-behind baggage” incidents and improved connection reliability.
- **Scalability:** Framework expandable to other airport functions, from stand allocation to terminal operations.
- **Recognition:** Award-winning collaboration between Fraport and InstaDeep, setting new industry benchmarks in AI for aviation.

Get in Touch:

Contact us to learn more on how InstaDeep is enabling the next era of optimizing airport operations.

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