



**INDIUM**

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**From Comfort to  
Cognitive Insights:  
Automation of Sleep  
Monitoring Analytics  
through MLOps**

SUCCESS STORY

## Client Overview

The client is a leading mattress manufacturer specializing in advanced sleep technology solutions. They provide smart health and sleep cycle monitoring applications that enhance the sleep experience, offering personalized insights to improve overall well-being. By leveraging innovative technology and data-driven analytics, they help optimize sleep patterns for healthier, more restful nights.

## Navigating the Business Requirements: Automating the Path to Optimal Model Deployment

Faced with the challenge of managing complex model training and deployment across multiple systems, the client sought a seamless, automated solution.

- ▶ **Seamless Model Training & Deployment:** Eliminate the hassle of manually orchestrating model training and production deployment. Automate the entire pipeline while effortlessly ensuring all systems stay up to date.
- ▶ **Battle of the Models: Pick the Champion:** Compare multiple models in real-time, analyze performance, and identify the superior contender. For optimal outcomes, deploy only the best-performing model to production.

# Smart Sleep, Smarter AI: Indium's MLOps-Powered Transformation

Indium tackled the client's challenges by designing a scalable, automated solution tailored to their needs. By leveraging advanced MLOps practices, Indium streamlined model training, selection, and deployment, ensuring efficiency, accuracy, and seamless integration. This approach enabled continuous improvement and optimal performance of AI-driven insights.

## Automating Sleep Intelligence with AWS SageMaker

Indium engineered a seamless MLOps pipeline using AWS SageMaker to enable continuous training of sleep pattern recognition models. These models processed data from smartwatches, appliances, and mattresses to analyze users' heart rate, respiration, and overall sleep quality.

## Streamlined Model Training with Repeatable Workflows

The MLOps pipeline was designed with AWS SageMaker to create structured, repeatable training workflows, significantly accelerating model development. The source code was extracted from DynamoDB, and AWS Lambda functions were used to trigger automated execution.

## Lifecycle Automation for Seamless Execution

A Lifecycle configuration was implemented within SageMaker to initialize and execute training scripts and ML models. The model evaluation results—including accuracy, macro-F1 score, precision, and recall—were systematically stored in S3 for analysis.

## Smart Model Selection: Choosing the Best Performer

Multiple models were evaluated based on key performance metrics. If a newly trained model outperformed the existing one, it replaced the older version stored in S3, ensuring that only the most accurate model was deployed.

## API-Driven Predictions & Continuous Deployment

The selected model's output was deployed as an API for real-time predictions. AWS CodePipeline facilitated continuous integration, while AWS CodeDeploy ensured smooth, automated deployment for a fully optimized AI-driven solution.





## Zero Hassle, Maximum Accuracy: Smarter Models, Faster Decisions

By implementing a fully automated MLOps pipeline, Indium empowered the client to accelerate AI model development and optimize performance with minimal effort.

- ▶ **2x Acceleration in Model Training & Deployment:**  
Automated workflows reduced manual effort and doubled the speed of training models and deploying updates when new features were introduced.
- ▶ **Effortless Model Evaluation & Selection:** Key performance indicators (KPIs) were assessed automatically, ensuring that the best-performing model was selected and deployed without any manual intervention.



## About Indium

Indium is an AI-driven digital engineering company that helps enterprises build, scale, and innovate with cutting-edge technology. We specialize in custom solutions, ensuring every engagement is tailored to business needs with a relentless customer-first approach.

Our expertise spans Generative AI, Product Engineering, Intelligent Automation, Data & AI, Quality Engineering, and Gaming, delivering high-impact solutions that drive real business impact.

With 5,000+ associates globally, we partner with Fortune 500, Global 2000, and leading technology firms across Financial Services, Healthcare, Manufacturing, Retail, and Technology—driving impact in North America, India, the UK, Singapore, Australia, and Japan to keep businesses ahead in an AI-first world.

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