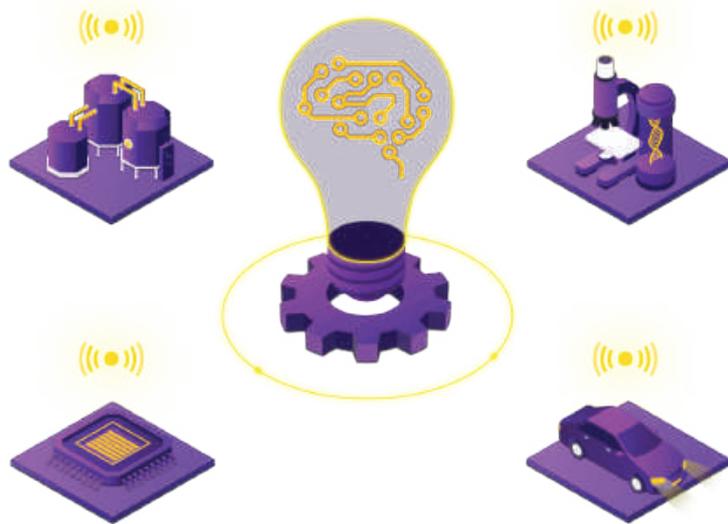RX

MakinaRocks

# What We Do

Founded in December 2017, MakinaRocks is a startup specializing in industrial machine intelligence solutions. Our anomaly detection model and intelligent control algorithm analyze sensor and numeric data to provide intelligent control, improve product quality, and detect anomalies in manufacturing equipment. We deliver our industrial AI solutions to manufacturing industries such as semiconductor, automotive, battery, and energy.

## Why MakinaRocks?

MakinaRocks streamlines the AI implementation process while implementing continual learning and domain knowledge to provide efficient and effective results to industries.

### Incorporate domain expertise into AI

To understand the challenges and concerns of each industry, domain expertise is necessary. We incorporate domain expertise into AI, tailoring each algorithm to fit the needs of our clients, helping AI narrow down and tackle specific issues.

### Overcome small data

"Small data" refers to the quantity and quality of given data. During the implementation process, issues with data quality, insufficient labels, and label imbalance often occur. MakinaRocks's Lifelong Learning technology overcomes such data challenges to enhance performance in dynamic operational environments.

### Streamline AI implementation Process

Manufacturing production sites are difficult to predict with general AI technology due to the complex nature of the sites and the limited number of site adoption cases. AI deployment requires continuous proof-of-concept (PoC), pilots, and system deployment. Using our original models and algorithms, we simplify the AI implementation process from start to finish, streamlining the integration and management of our clients' AI systems.

# About Us

The MakinaRocks team consists of experts in computer science, mathematics, physics, and engineering. Our interdisciplinary team works collaboratively to create solutions that tackle the unique data challenges of our clients.

## Mission

Make industrial technology intelligent and deliver it as transformative solutions.

## Vision

We develop industrial AI solutions and a platform that bring measurable improvements to high-complexity manufacturing and energy industries.

## Our Team



## Milestones

**2017**
12. MakinaRocks is founded

**2018**
03. Silicon Valley office is established

05. Seed Round is complete

**2019**
07. ADS prototype is complete

**2020**
04. RaPP concept is accepted by the ICLR

07. Series A is complete (USD$10 million)

# Products
## Solutions

MakinaRocks offers predictive maintenance with our Anomaly Detection Suite (ADS), and process & control optimization with our Intelligent Control Suite (ICS), both available on-premise and on the cloud.
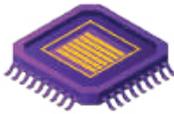
## Anomaly Detection Suite (ADS)          "Detect Early, Act Smart"

Our Anomaly Detection Suite identifies and predicts failures in manufacturing machinery—delivering optimal results. It is imperative to detect anomalies early on to minimize unexpected downtime in manufacturing or power generation to assure product quality.

During the manufacturing process, anomalies such as malfunction of equipment or defects in parts of an assembled product may occur. ADS provides multi-faceted insights into such issues by monitoring not only the machinery in one factory, but also in other factories, producing output by means of communication.

### Use Cases

Predictive Maintenance for Semiconductor Processing Equipment

Predicting Failures of Robotic Arms

Precursor Detection in Energy Storage System

## Intelligence Control Suite (ICS)          "Let ML control"

Our Intelligent Control Suite provides autonomous and optimizable data- and ML-driven control options for a wide range of industrial applications. ICS gives our clients the option to simultaneously control the numerous variables in operation efficiently.

The core of the suite lies in the ML engine that may learn from past controls or find optimal control through simulators. Combined with our Lifelong Learning technology, it can control operations such as HVAC in buildings, fermentation bioreactors, and manage system energy levels.

### Use Cases

Automation of Microbial Fermentation Process and Detection of Abnormal Behavior

Enhancement of Wheel Alignment Quality with Machine Learning

Improving EMS efficiency with Deep Reinforcement Learning in Electric Vehicles

# Products
## Platform

Continual learning is necessary to maintain and improve the performance of AI solutions applied onsite.
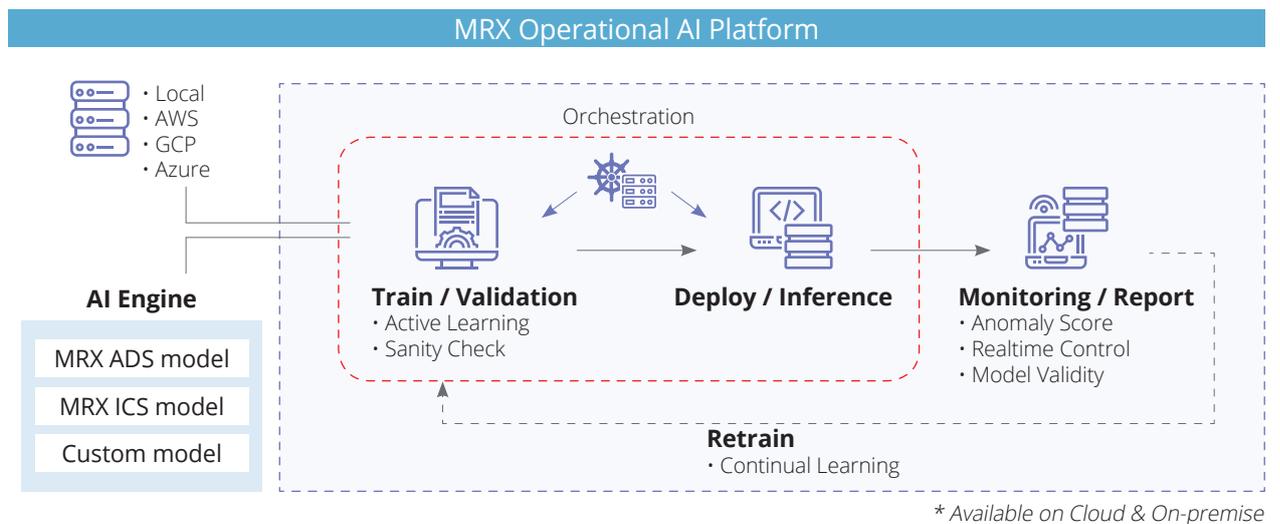MakinaRocks's platform provides the technology necessary to resolve challenges that arise from the operation side of industrial AI solutions.

## Operational AI Platform  *"Go from Adoption to Industrial ML Operation"*

Due to the uncertain nature of the production environment, it is necessary to provide improvements while maintaining the performance of the solution. While the mainstream machine learning model focuses on model learning and distribution pipelines to improve performance, when the input/output data distribution changes or a corner case occurs, performance deteriorates.

Therefore, we have developed the MakinaRocks Lifelong Learning model, enabling our AI solution to cycle around from collection and preprocessing to model learning, distribution, and operation—continually and actively learning to adjust to fit the needs of the environment.

MakinaRocks aims to implement AI-driven Lifelong Learning to industrial AI. Our operational AI platform provides model (re)learning and (re)distribution pipelines with consideration to the execution and operation of the production environment and process.

### MRX Operational AI Platform

- Local
- AWS
- GCP
- Azure

**AI Engine**

| MRX ADS model |
| MRX ICS model |
| Custom model |

Orchestration

**Train / Validation**
- Active Learning
- Sanity Check

**Deploy / Inference**

**Monitoring / Report**
- Anomaly Score
- Realtime Control
- Model Validity

**Retrain**
- Continual Learning

*\* Available on Cloud & On-premise*

## Features

### Continual Learning

Maintains high performance by updating the deep learning model continually.

### ML Pipeline

Seamlessly streamlines all aspects of the Machine Learning pipeline such as the model validation, deployment and retraining processes.

### Multi-cloud Architecture

Deployable with various cloud infrastructures (AWS, MS, Azure, GCP), simplifying the integration process.

**MakinaRocks**

www.makinarocks.ai

contact@makinarocks.ai

**MakinaRocks**

www.makinarocks.ai

contact@makinarocks.ai