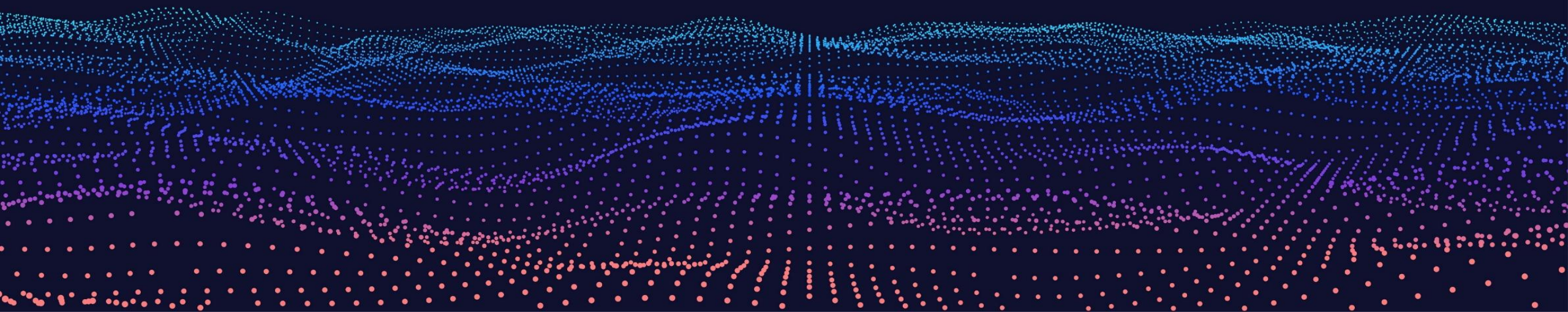
코드비전 주식회사
CODE VISION

CODEVISION Inc.

AI-Specialized R&D Company



1. CODEVISION Introduction

Company Overview / Business / Partners

코드비전 주식회사
CODEVISION

Pioneering a Better Future with AI

AI R&D Company, Codevision Specializing in Image & Signal Processing

Codevision delivers **AI software solutions** across diverse industries using deep learning-based technologies.

Leveraging real-world field data,
we develop core AI technologies and services
to provide customized solutions tailored to client's needs.

AI One-Stop Solution : Data / AI Tech / AI Platform & Application
Developing customized AI solutions based on deep learning

Trusted AI R&D Leader
Selection of Numerous R&D Projects and Proven Successful Outcomes

Global AI Expertise Partner
Extensive on-site experience
: Facilities / Equipment / Partner Companies Ready

Name	Codevision Inc.
CEO	Eungyeol Song
Establishment	2018 / 11 / 10
Address	- 396 WorldCup buk-ro, Mapo-gu, Seoul, Republic of Korea Nurikum Square R&D Tower 803 - 16F 29, 33, Pyeongsan-ro, Uichang-gu, Changwon-si, Gyeongsangnam-do, Republic of Korea
Business	**Data** **AI Tech** **AI Solution** **SaaS**

Business

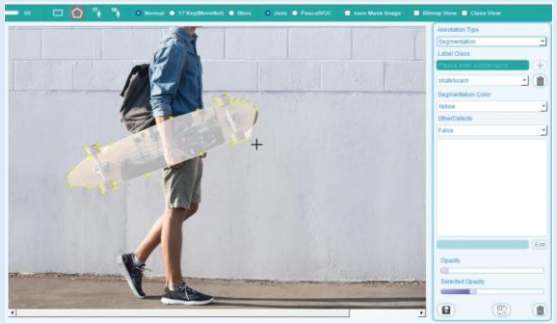
We provide **deep learning-based, customized AI technologies tailored to clients**, built on data collected directly from the field.

AI One-Stop Solution

AI Data

Industry Tailored High-Quality Dataset Construction Service

- Expert consulting by data specialists
- Custom data processing platform
- Field-optimized dataset

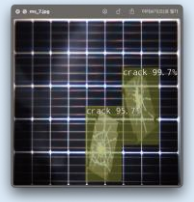


AI Tech

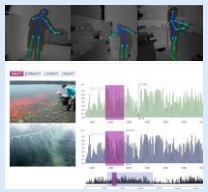
AI Research & Development for Vision / Signal Processing

- Custom AI development for server, cloud, edge environments
- Data-centric problem solving for diverse data types
- Easily integrable as APIs for various systems and workflows

1-Dimensional (ultrasound, IoT)



2-Dimensional (image, video)

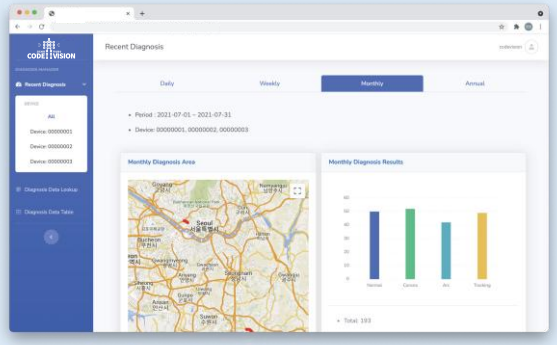


3/multi-Dimensional (Depth, Lidar)

AI Solution

AI Platforms & Application Development

- AI training, model management, and monitoring
- MLOps-based platform for continuous operations
- Intuitive tools accessible even to non-experts



Our experts cover the entire AI pipeline,
from data acquisition to full operational deployment of AI solutions.

Partners

Clients who have partnered with CODEVISION

연세대학교 YONSEI UNIVERSITY
창원대학교 CHANGWON NATIONAL UNIVERSITY
동명대학교 TONGMYONG UNIVERSITY
단국대학교 DANKOOK UNIVERSITY
서울과학기술대학교 SEOULTECH SEOUL NATIONAL UNIVERSITY OF SCIENCE & TECHNOLOGY
부산대학교 PUSAN NATIONAL UNIVERSITY
SAMSUNG 삼성창원병원
KETI 한국전자기술연구원
IAE 고등기술연구원 Institute for Advanced Engineering
KFRI 한국식품연구원
KOMERI
(사)한국인공지능협회 Korea Artificial Intelligence Association
FURIOSA
OptAI OPTIMIZE AI SOLUTION
Metaisquare 메타아이스퀘어
iCent IP Convergence Technogy Leader
LOOK INSIGHT
CI-TECH Creative Intelligent Technology Co.,Ltd
i-WARE
SIECOM SEOUL INDUSTRIAL ELECTRIC CO.,LTD.
VIVITY AI
U-TRON 주식회사 유트론
SINWOO Hitec
SHC 신흥기공
NX NEXTEN ELECTRONICS
HS HANSUNG S&I HANSUNG SYSTEM & INTEGRATION Co., Ltd.
DAEYANG
TOPSCC
YUJIN SMRC 유진에스엠알시
대유이피
JAT
우리아이교육연구소
DIAH
GOM&COMPANY
(주)삼영검사엔지니어링 INSPECTION&ENGINEERING CO., LTD.
CROSSCOMMERCE SOLUTIONS
VOICE CADDIE
IPS 특허법인 아이피에스

02. Manufacturing AI Monitoring Solution

코드비전 주식회사
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Manufacturing AI Monitoring Solution

AI Transformation (AX) for Smart Manufacturing

Vision AI for Real-Time Detection of Defects in Production Sites and Components

Auto-stops the operation and **notifies** operators upon abnormal events

System Architecture

Solution Design of AI Expert

From Sensor Installation to Full Hardware Infrastructure Deployment for AI Solution Operation

Field-Installed Data Acquisition Devices

Component Manufacturing Equipment

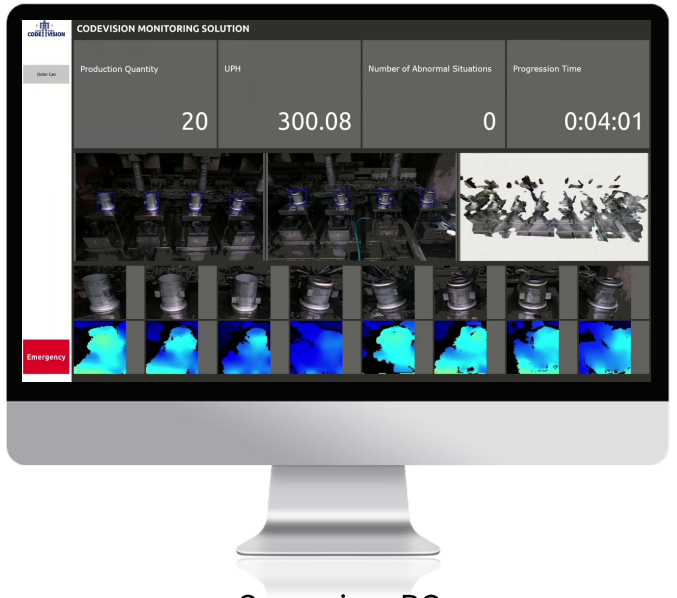
Industrial AI Edge Device

On-premise AI Operation Server

Codevision AI Monitoring Solution

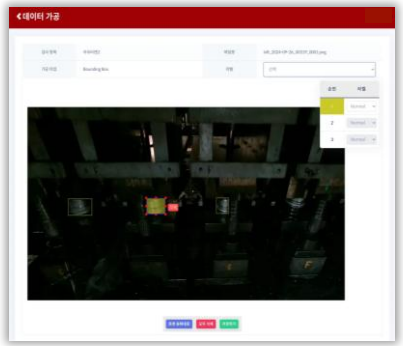
Inspector Monitoring Device

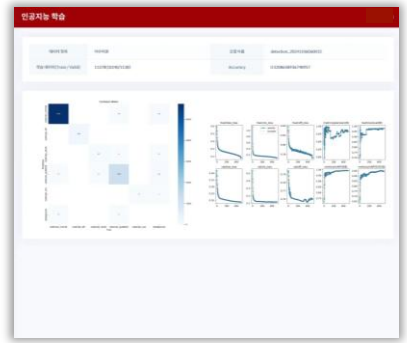
On-Site Real-Time AI Monitoring Platform



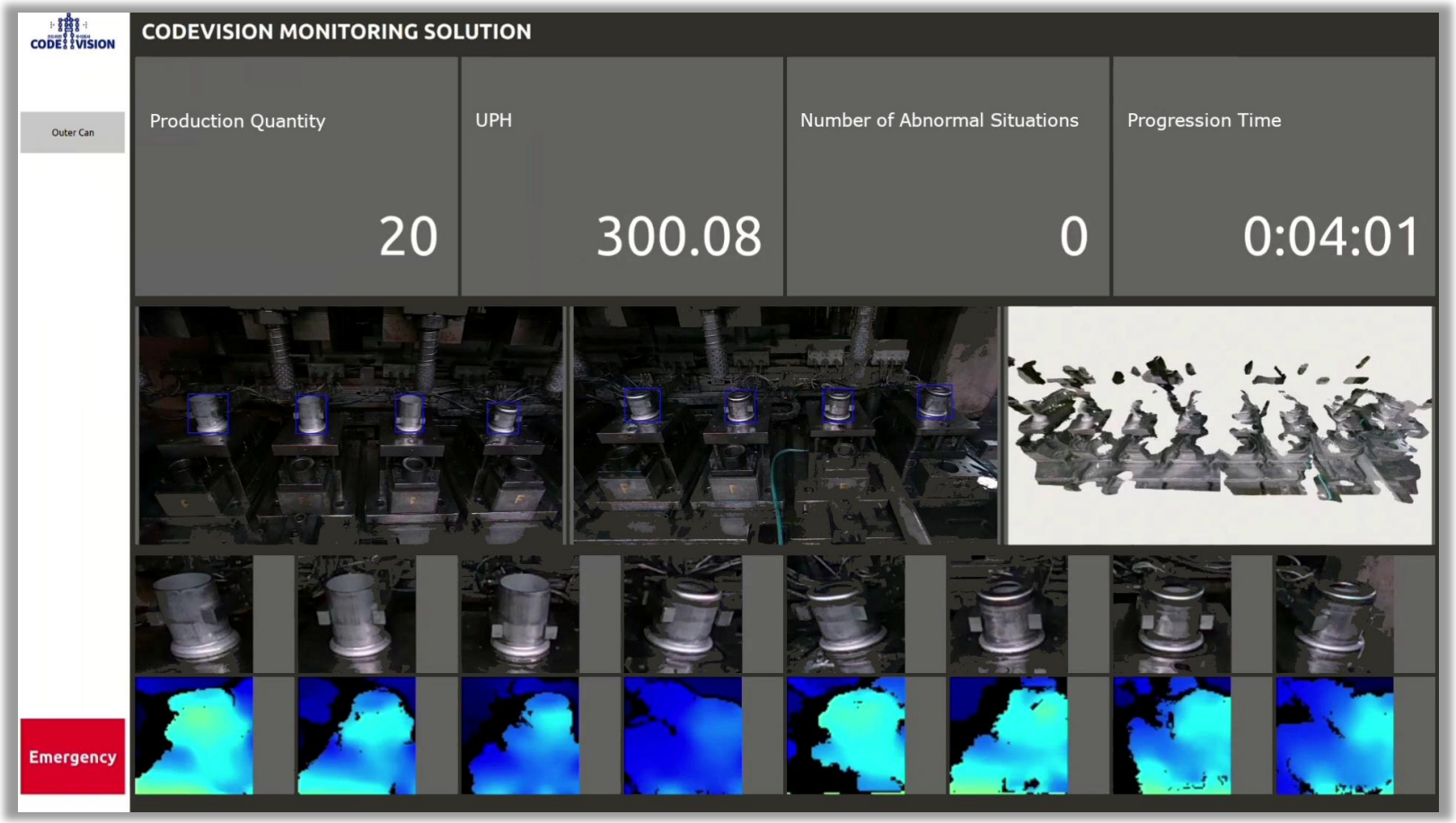
Supervisor PC

AI Model Management MLOps Platform





On-Site Real-Time AI Monitoring Platform



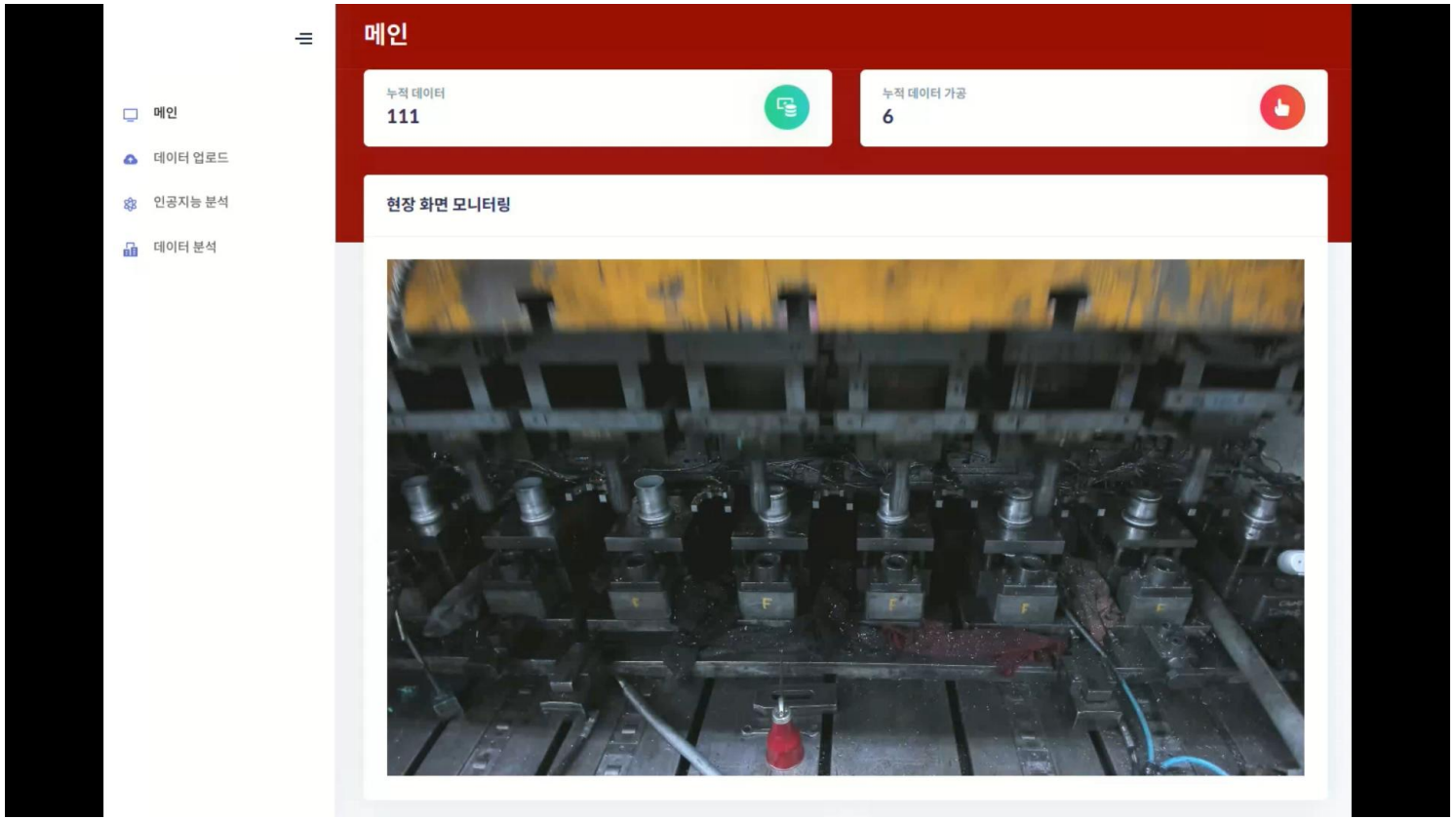
Real-Time Monitoring
- Real-Time Monitoring of manufacturing operations

Detect Anomalies
- Automated manufacture process monitoring and analysis with AI

Alarm & Auto-Control
- Alarm & Auto-stop upon anomaly detection for worker

Reliable AI
- Certification model performance based on ISO/IEC
- Certification of AI Trustworthiness (CAT)

AI Model Management MLOps Platform

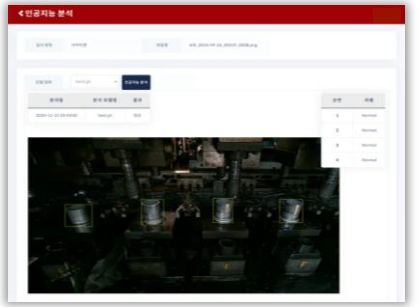


AI Model Management Made Simple : Anytime, Anywhere, for Anyone

- **Maintenance solutions** for reliable AI operations
- Maintain **high-performance AI services** through continuous **model optimization**

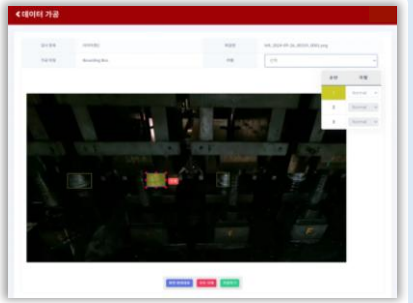
Data Analysis Page

- Management of additional data collected during on-site operations



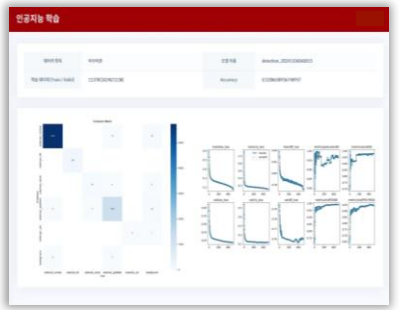
Data Labeling Page

- Data labeling for AI model training available



AI Training Page

- AI model performance monitoring
- Performance enhancement through continuous AI re-training



Representative Case

Outer Can Metal Molding Process Monitoring

Client **[South Korea]** Automotive Parts Manufacturer

Target Aluminum outer can (EV part)
- Manufacturing method : Deep drawing

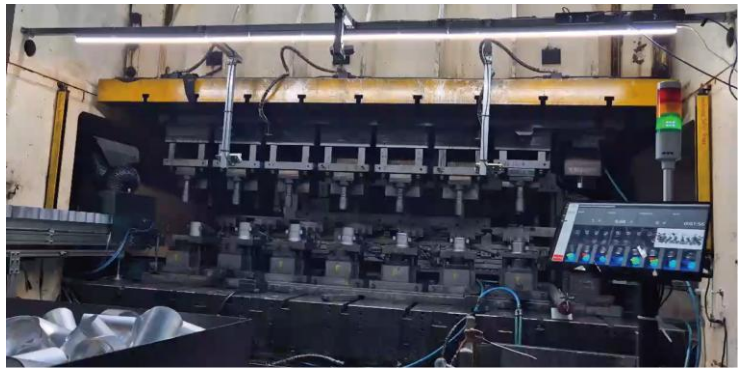
AS-IS **Manual visual inspection** by workers at each production stage
- Defective part occurrence → Mold damage → Production line halt

TO-BE **Automation of ejection defect inspection**

Proactive prevention of mold damage → Production downtime is reduced

Accurate pre-calculation of delivery volume → Resolved delivery delays

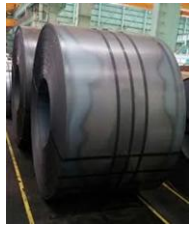
System designed to operate without disrupting existing workflows

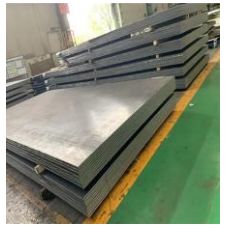


Steel Sheets Defect Monitoring

Client **[Jakarta, Indonesia]** Metal Manufacturing Company

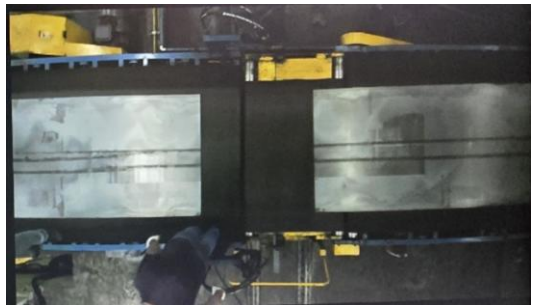
Target Steel sheets cut from hot-rolled coils

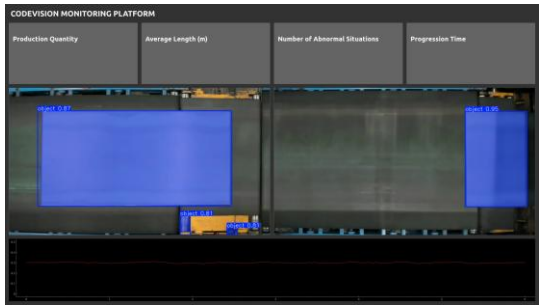




Tech **Vision and laser sensors used to classify steel sheets and monitor coil production defects**

System design optimized for overseas factory environments
- On-site visit for customized consulting & solution development
- Infrastructure tailored to local conditions, including sensors / data acquisition devices / equipment / servers, etc.



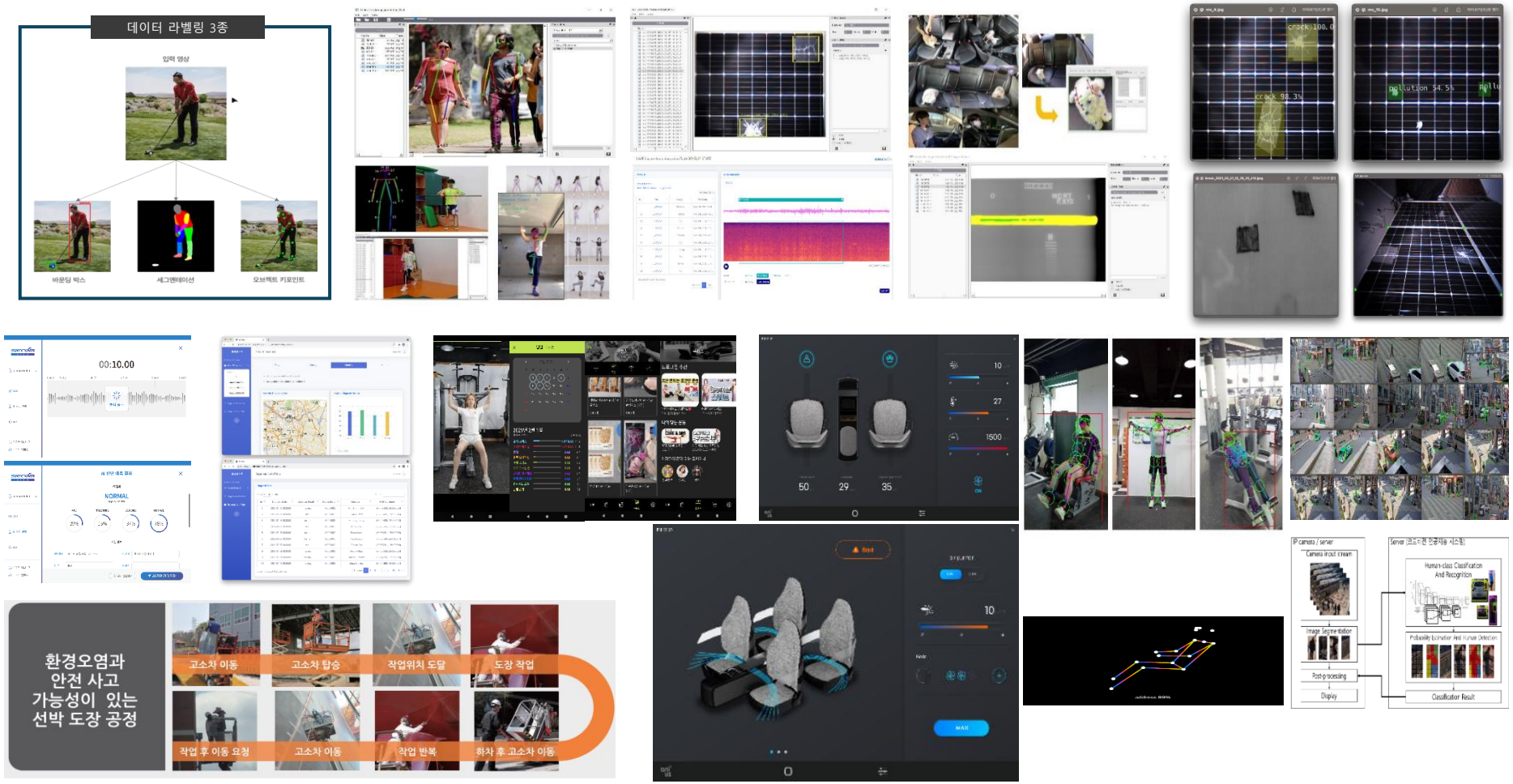


03. Manufacturing AI Development Case

코드비전 주식회사
CODEVISION

Case

Our expertise has been validated through successful projects in diverse sectors such as manufacturing, mobility, environmental technology, and healthcare.



CODEVISION Homepage
Check exhibition materials

Innovate the industry with CODEVISION !

Various Custom AI Solution Options

"AI infrastructure and operational systems optimized for client's environment"
we deliver tailored AI solutions based on each client's needs.

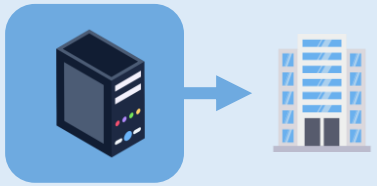
On-Premise Server

AI system deployed within the **client's internal infrastructure**

Enhanced security and flexible operation within a private environment

Independent operation over internal network

Ideal for handling sensitive data & integrating with internal systems



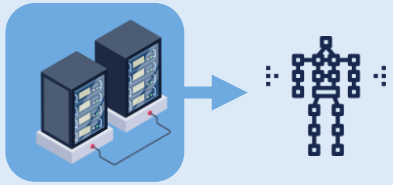
Ex. security-critical industries such as healthcare, finance, etc.

Codevision-Owned Server

Operates and manages dedicated GPU servers (e.g., NVIDIA A100, H100)

Provides custom server specifications based on **client requirements and usage**

Offered at a **cost-effective price** point



Ex. GPU hosting service for AI model training & inference

Cloud Servers

Training, Deploying, and Operating AI Models & Solutions using **domestic and global Cloud Providers servers**

Elastic scalability on resource demands & Flexible infrastructure

Ex. AWS, GCP, Azure, etc.

Edge AI

- Distributed architecture that runs AI directly on-site where data is generated
: Real-time, low-latency inference

On-Device AI

AI execution within **standalone devices**
Ex. Smartphones, Cameras, Drones

Embedded AI

AI running on **ultra-compact, low-power embedded chipsets**
Ex. IoT, NPU, MCU

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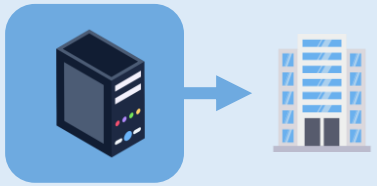

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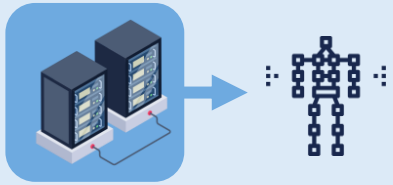

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Ex. AWS, GCP, Azure, etc.

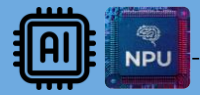
Industrial AI

- Applied in industrial environments for **process optimization**, **defect detection**, and **predictive maintenance**.
- It analyzes sensor and vision data in real time, featuring high-performance hardware and high stability.

On-Device AI

Edge Devices (smartphones, IoT, cameras, etc.)
AI inference possible without cloud connectivity.
Key features: minimized latency, enhanced security, low-power operation.

Personal AI



A Mini PC with an **NPU** connected via **USB-C** enables AI functioning
- **Personalized services** based on user data in daily life
- Applied to education and simple home automation

Detection & Recognition Solution

Vision AI Technical Skills

Applicable across **various industries** through the deployment of AI-based detection and recognition models

- Even without pre-existing data, we can development AI solutions by constructing the necessary datasets.
- Easy access and usage through intuitive app/web-based platforms
- Reliable AI model trained on high-quality data

Use Cases

- Anomaly Monitoring
- Defect and Fault Detection
- Automation & Operator Assistance

Key Features

[Model]

20+ AI algorithms for detection & recognition

- Optimized for on-premise, cloud, and edge deployment.

[Speed]

Real-time detection powered by lightweight, optimized models

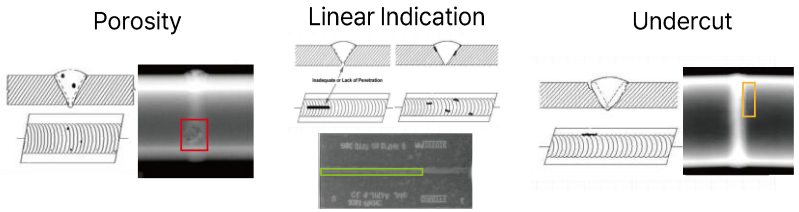
[Accuracy]

High-precision detection results

Weld Defect Detection Solution for Radiographic Testing (RT)

Digitalization & Automation of Manual Visual Inspection in Non-Destructive Testing (NDT)

→ **Automated detection & interpretation** of weld defect **types / sizes / locations**



AI defect interpretation based on **ASME and ISO industrial standards**

AS-IS

Manual Film Interpretation by Experts
X-ray Inspection → Film Development → Human Visual Inspection

Inefficiencies
- High inspection cost
- Long interpretation times
- Complex workflow

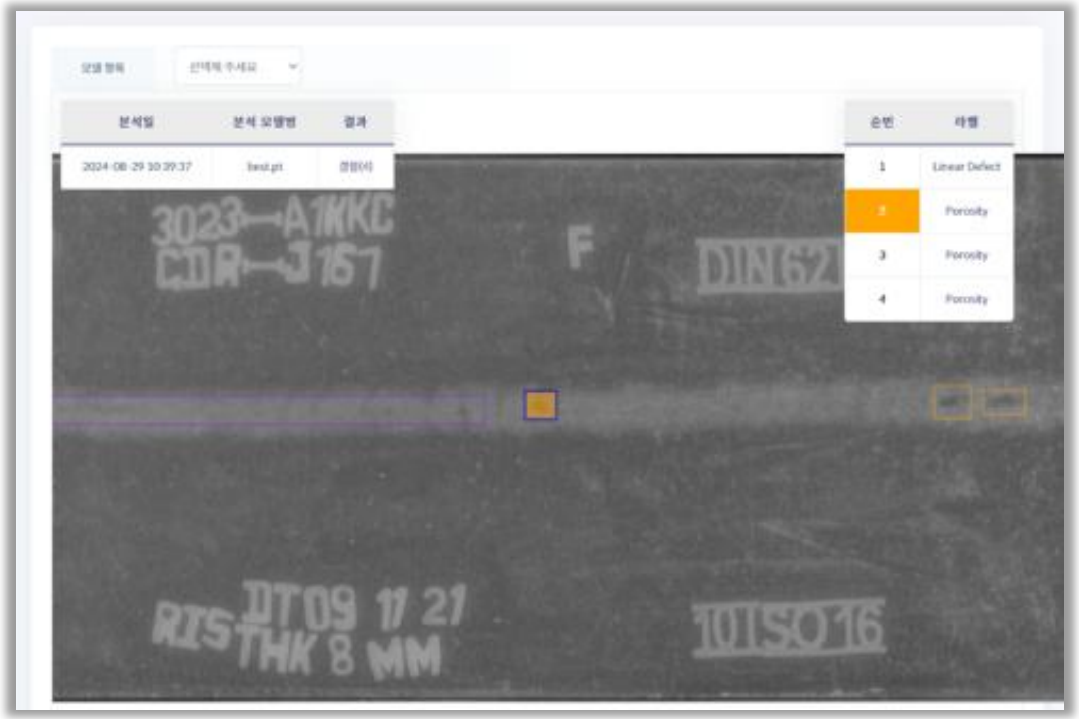
Heavy Dependence on Highly Skilled, Certified Inspectors
- Labor-intensive process with risk of human error

TO-BE

AI Digital Transformation(DX) of Weld Inspection
Upload film data to server → Vision AI → Auto-interpretation

Significant Reduction in Inspection Time
- Minimizes downtime of industrial facilities

Improved Objectivity & Consistency
- Enhanced inspection reliability and trustworthiness



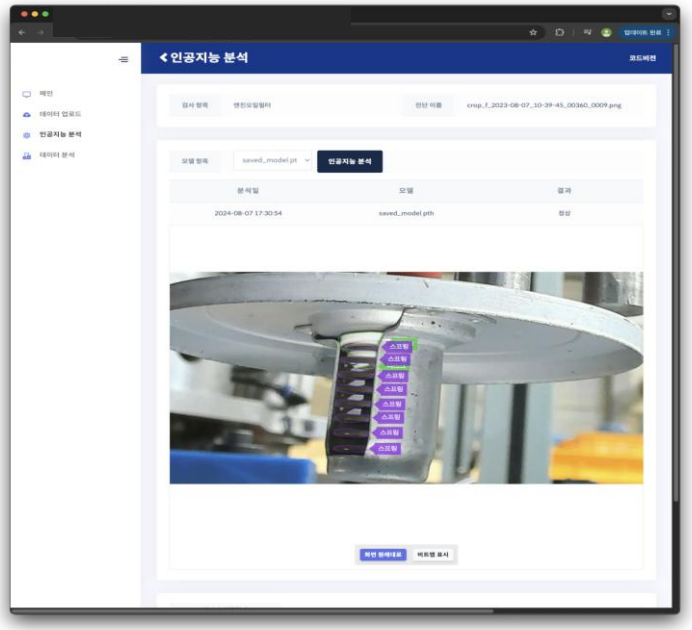
Client	AI Tech	Target	Device
Welding Defect Inspection Company	Detection	RT X-ray Film	Cloud

Engine Oil Filter Plate Defect Detection Solution

AI monitoring system for the manufacture process of lower plates in car engine oil filters

Maximizes production efficiency through

automated defect inspection of faulty components



Detects **Discs & Springs** Using **Segmentation AI Models**

- AI models are verified through QC/QA & performance validation by process managers and on-site operators.
- Built as a **low-power, lightweight embedded solution** using **NPU**

AS-IS

Traditional Manual Visual Inspection

Prone to variability, labor intensity, and human error

TO-BE

AI-based Monitoring System for Automated Inspection of Defective Parts

Digital Transformation (DX)
- Improved productivity & operational efficiency
- Factory automation

Automatically Classifies 5 Distinct Defect Types in Real Time
- High-quality dataset acquired from real-factory conditions

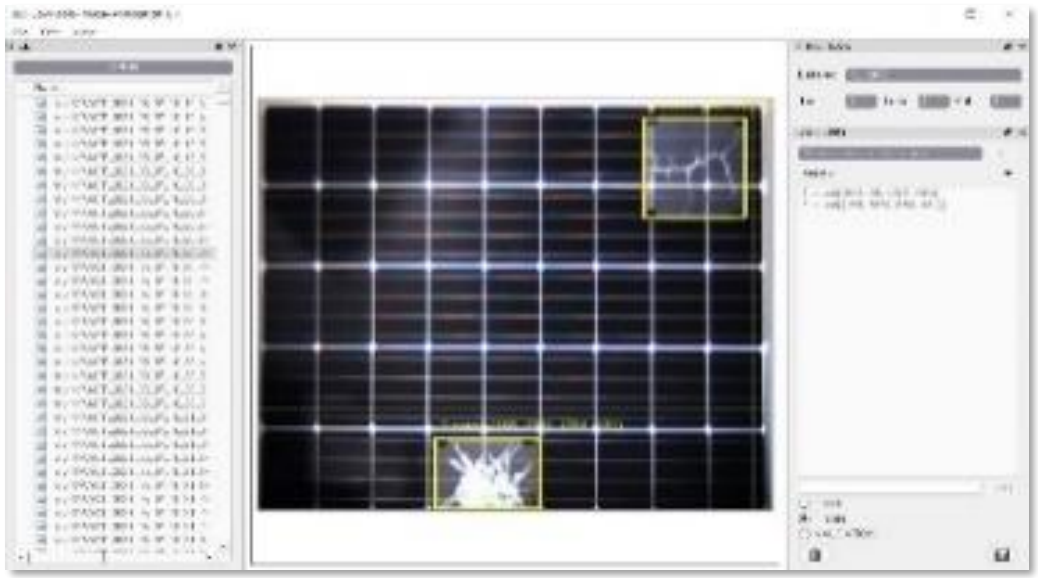
Good | Bad Disk | Bad Spring

Client	AI Tech	Target	Device
Automotive Parts Manufacturer	Detection	Automotive Parts (Oil Filter Plate)	Cloud Embedded

Solar Panel Defect Detection

Automated Detection & Classification of Damage, Contamination, and Defects in High-Risk Solar Panels

- AI edge computing for real-time, on-site analysis
- Lightweight CNN-based object detection model optimized for embedded systems



Fine-Grained Classification of Defective Cases

[Damage]

- Detects critical defects in frames, glass, and other high-risk components

[Contamination]

- Identifies non-failure contamination such as dirt or residue on frames and glass surfaces

Client	AI Tech	Target	Device
Electronic Technology Development Company	Detection	Solar Panels	Edge On-Premise

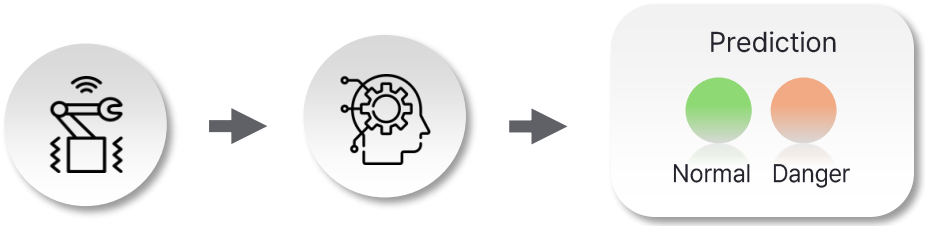
Predictive Maintenance Solution

What is Predictive Maintenance?

A **maintenance strategy** that analyzes equipment data to detect **early signs of anomalies** and take **preemptive action before failures occur.**

PHM (Prognostics & Health Management)

- A system designed to enable predictive maintenance through continuous health monitoring and fault prediction.
- PHM supports informed decision-making by predicting the health status and Remaining Useful Life (RUL) of equipment.



Use Cases

- Smart Factories
- AI-Based Monitoring of Industrial Equipment

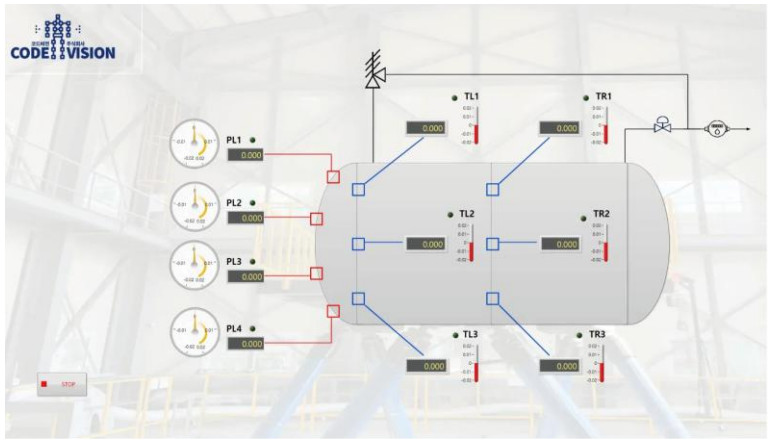
Key Features

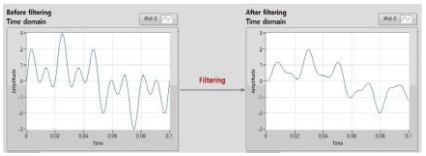
- Detects & analyzes **abnormal signals** generated by **equipment defects**
- **Predicts failures before they occur**, enabling **significant reduction in maintenance costs**
- Provides optimized solutions for **multi-dimensional signals (vibration, temperature, etc.)**

LNG/LH2 Ship Cargo Tank Monitoring Solution

Integrated Thermal Performance Analysis System and Evaluation Technology
Based on Large-Scale Cloud Computing for High-Efficiency Design and Performance Enhancement
of LNG/LH2 Ship Cargo Tanks in Real-World Operating Conditions

DAQ Manager

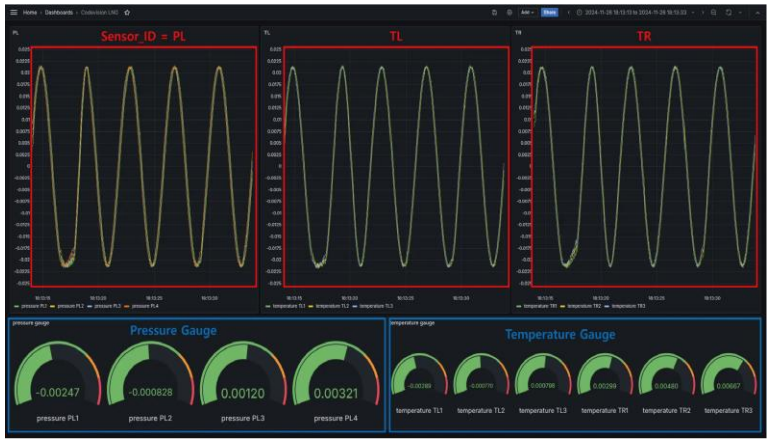


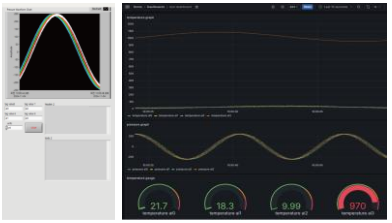


Built-in Data Processing
Functions for Signal Conditioning
: Filtering, Noise Reduction

RESTful API-based
Time-Series DB Design
: easy scale-out expansion

CODEVISION Monitoring Platform

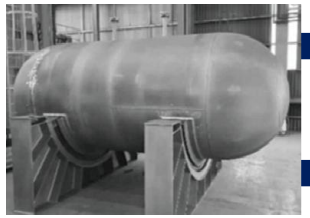




Web-based GUI
Monitoring Solution

Data Visualize via Dashboard
for Stored Database

System Architecture



LNG/LH2 Ship
Storage/Fuel Tank

DAQ Manager

Pressure Sensor
(4 point)

Temperature Sensor
(6 point)

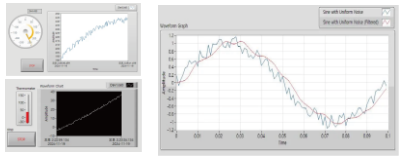
I/O

DAQ
Hardware

Real-Time
Data Acquisition

ADC

PC : DAQ Software



DAQ Hardware
Control

Signal
Conditioning

Time-Series
Database

**CODEVISION
Monitoring
Platform**

Dashboard
Visualization
of Stored Data

PHM (Prognostics and Health Management) Solution for Motor Operating Valve(MOV)

AI-based PHM System for Motor Operating Valve(MOV)

Monitoring & Diagnosis

- Predicts faults caused by **Overstress, Wear-out**

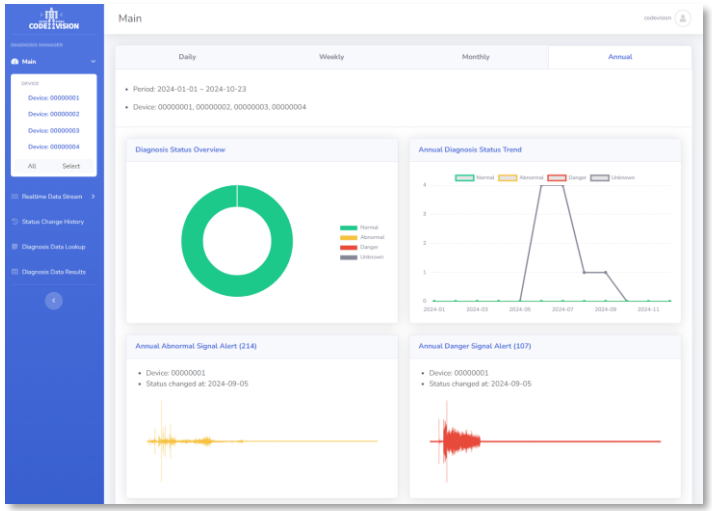
Anomaly Detection Algorithm

- Analyzes distinctive **vibration signals** generated by **defects** in individual components
- Sends alerts when potential failure conditions are detected

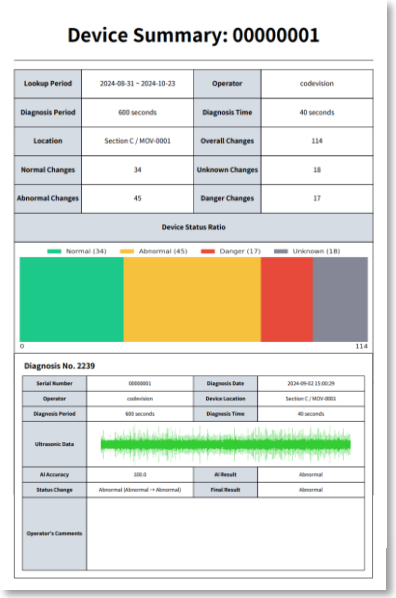
Full End-to-End PHM System

: from sensor installation to platform development

Administrator Dashboard



Automated report generation & summarized diagnostic insights



Client	AI Tech	Target	Device
Facilities Operating Industrial Equipment	Predictive Maintenance	Motor Operating Valve (MOV) Vibration Sensor	Cloud On-Premise

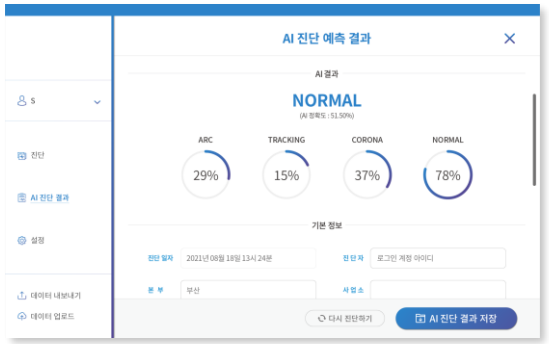
Electric Power Equipment Failure Detection

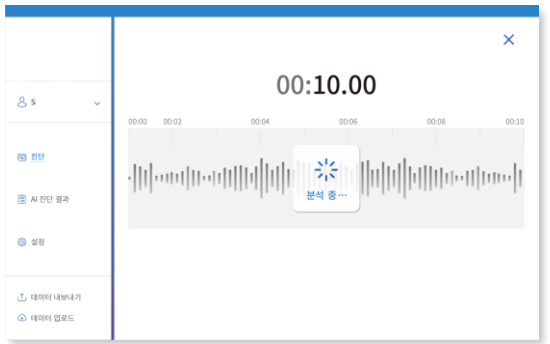
AI-Based Fault Stage Classification for Electric Power Equipment

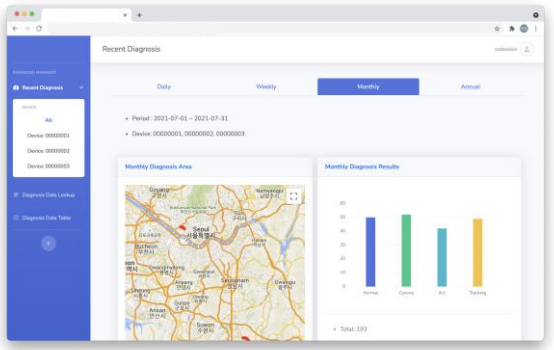
AI Transformation(AX) of Manual Expert Diagnosis

Mobile Diagnostic App Solution

- **Integrated with ultrasonic diagnostic devices** for on-site power pole inspection
- Real-time AI analysis of **ultrasound** to detect defects and classify fault types
- Available as a **tablet-compatible & on-premise server-based version**







AS-IS

Manual Inspection Using Ultrasonic Devices for Power Pole Fault Diagnosis

Relies Heavily on Expert Knowledge and Experience
- Inconsistent reliability based on inspector skill level
- Shortage of qualified technical personnel

TO-BE

AI-based Automation of Power Pole Fault Diagnosis

Tracking & Management of Power Poles with Suspected Faults
- Improves field operation efficiency
- mitigates skilled labor shortages

Integrated Management Platform
- Transmits and stores data in a centralized system

Client	AI Tech	Target	Device
Power System Company	Predictive Maintenance	Power Pole Ultrasonic Sensor Data	Cloud On-Premise

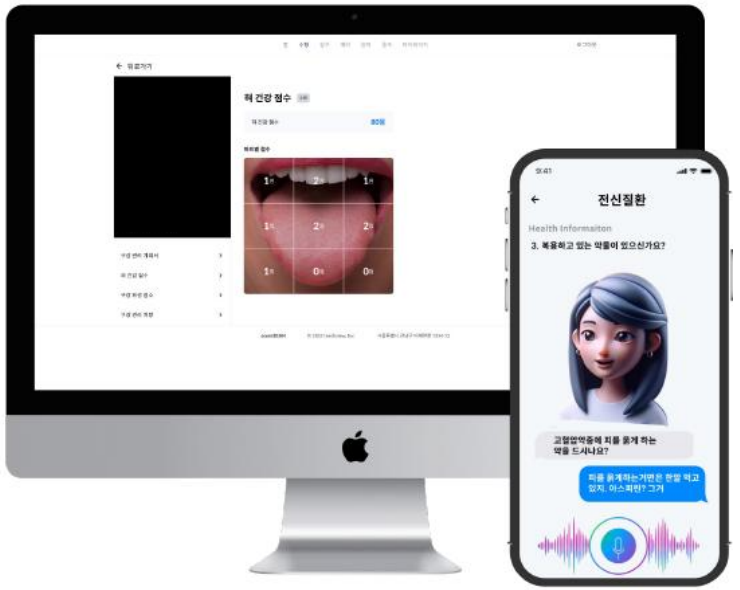
04. Development Case

Medical / Healthcare

Tongue Analysis Solution for Digital Health Diagnosis

AI Tongue Analysis Solution for Personalized Digital Oral Health Curation

TECH	
	Tongue Region Segmentation
	Tongue Coating Index (TCI) Evaluation for bacterial coating analysis
	Built-in LLM AI Solution with Symptom Inquiry Service



Tongue Region Segmentation

Automated Evaluation of (TCI)

AI Tongue Health Analysis

- **Automatically analyzes tongue images** using segmentation & TCI classification AI models
- Enables integrated diagnosis by combining AI results & clinician evaluations
- Validated in collaboration with **dental clinics as a clinical testbed**

15,000 Tongue Images Processed Based on Expert Oral Health Criteria

- Custom data processing platform developed for original **TCI labeling**

Client	AI Tech	Target	Device
Digital Dentistry Service Company	Detection Diagnosis	Tongue Coating	Cloud On-Premise

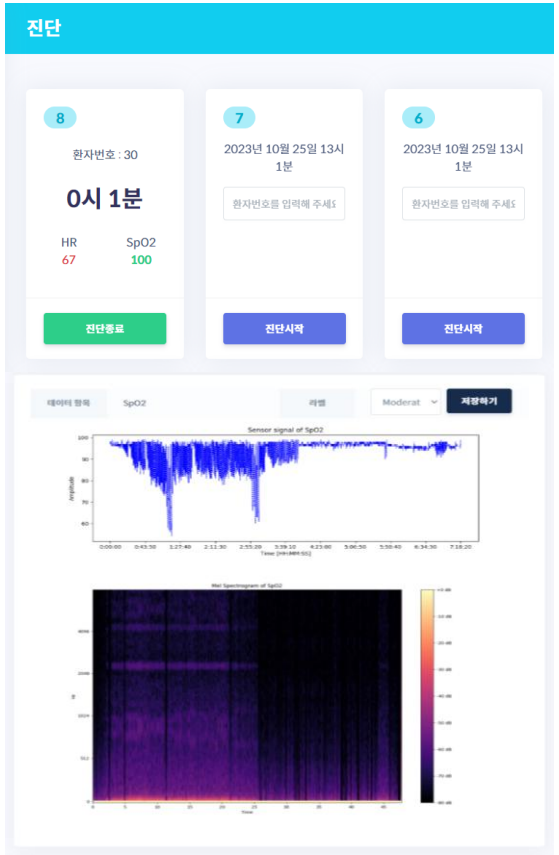
Medical / Healthcare

Polysomnography(PSG) Analysis & Diagnosis Assistant

Diagnoses to Severe Sleep Apnea Using Oxygen Saturation(SpO2) & Electrocardiogram(ECG) Sensor Data

Enables early screening of sleep apnea patients in ICU and Stroke Units (SU)

Deployable on mobile and wearable devices



Trusted & Validated AI

- **Co-developed with neurologists** and validated through testing by hospital medical staff
- **Sensor data using actual FDA-certified medical equipment**
  : Collected **1,750** Medical Data Records

AS-IS

AI Analysis & Diagnosis System for PSG Data

Inefficient Workflow in Interpreting 7+ Hours of Sleep Data
- Complex manual scoring and annotation process
- Long diagnosis time and delayed results
- High potential for human error

TO-BE

AI-Based Automated Interpretation and Diagnosis

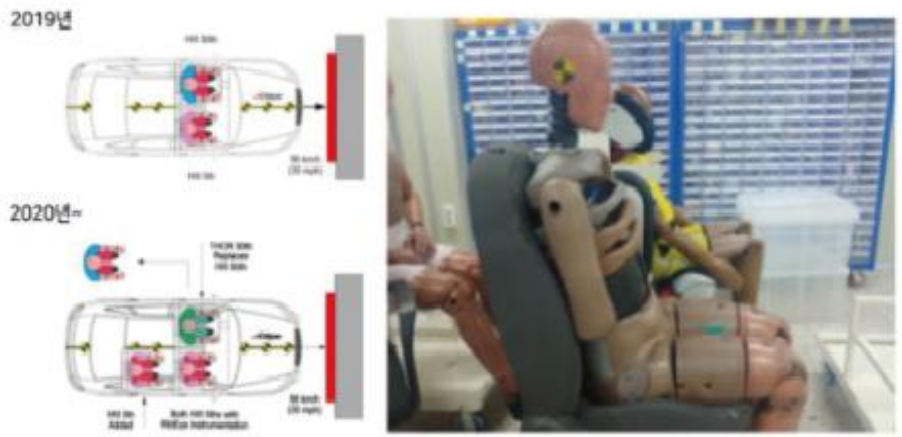
Efficiency
- Reduces analysis time to under 10 minutes

Introduces Objective & Quantitative Standards for Supporting Diagnosis
- Enhances diagnostic accuracy and consistency

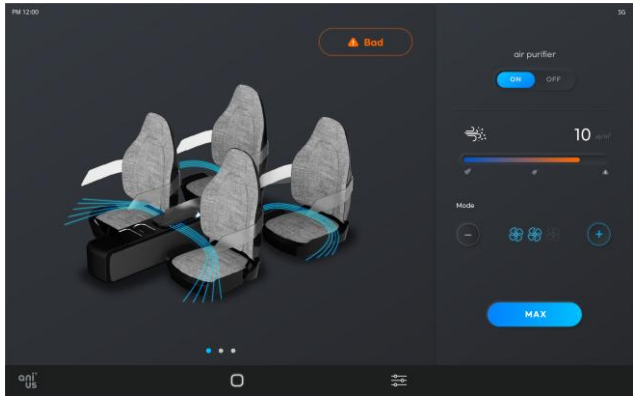
Client	AI Tech	Target	Device
Neurology Department at Hospital	Diagnosis	PSG Data	Cloud

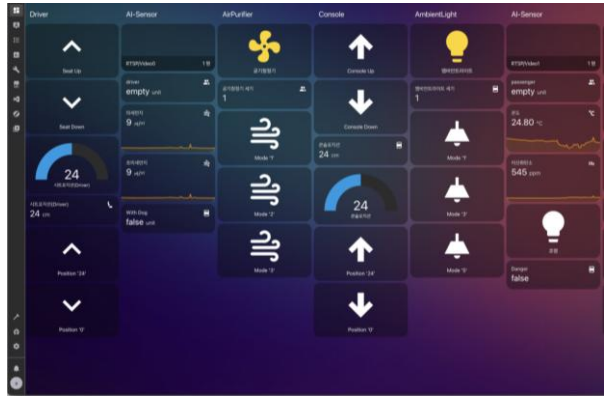
Mobility

Car Crash Test Evaluation and Dummy Analysis



Mobility Occupant Recognition and Indoor Analysis



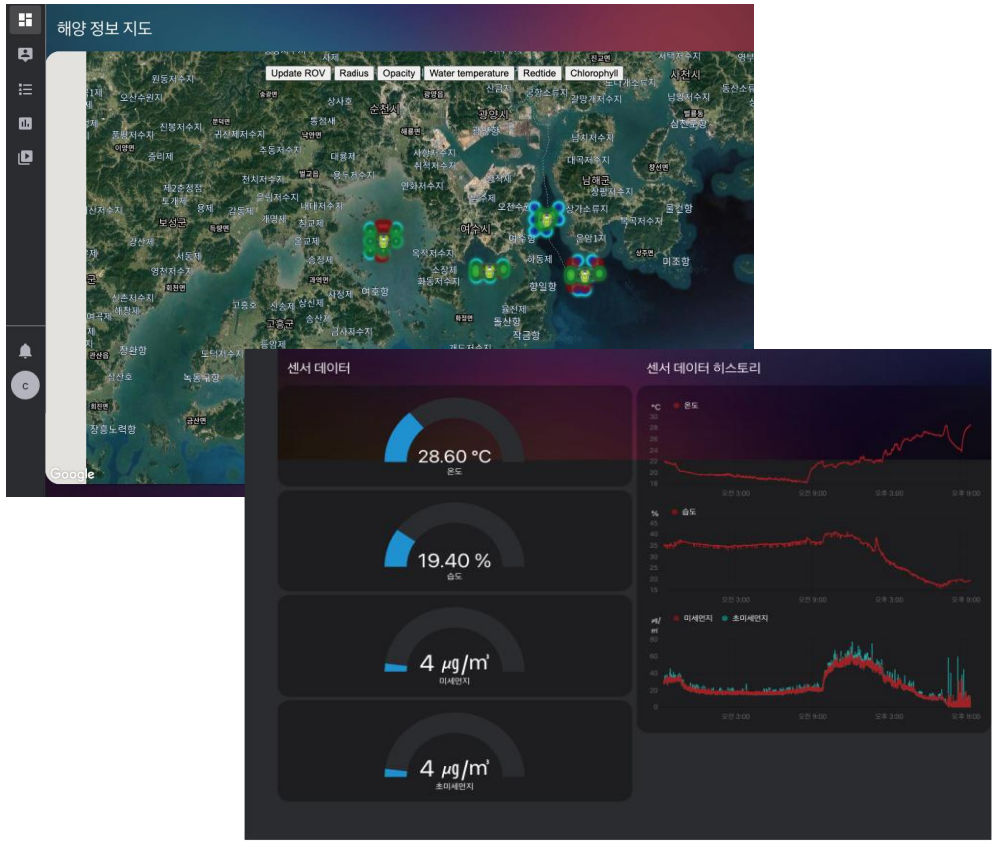


In-Vehicle Human & Pet Behavior Recognition

Skeleton-Based Pose Estimation

Ecology / Environment

Underwater Monitoring and Red-Green Algae Prediction Using Marine Robots



Digital Lifestyle

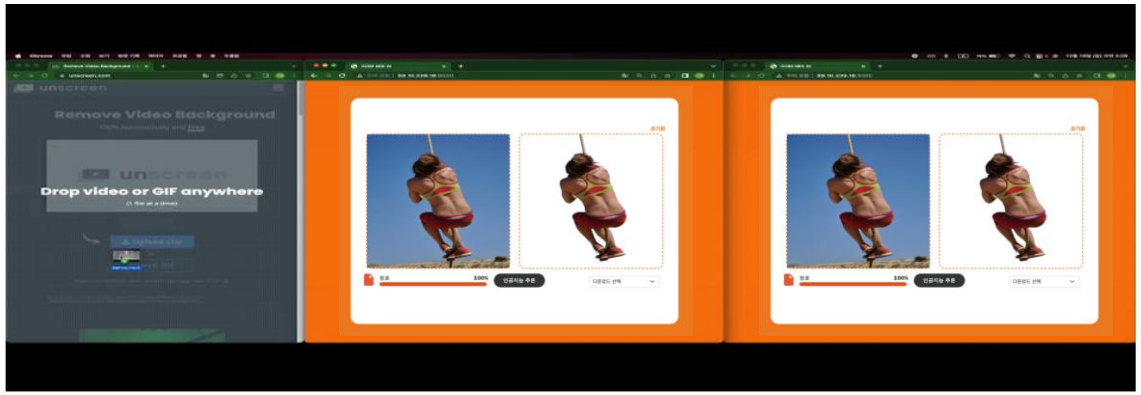
Video Background Removal Solution

AI SaaS Video Editing Solution

- Seamless background removal
- Accurate object recognition

Optimized AI Models with Distributed Processing

- **Over 50% faster than competitors**



Global Competitor (Unscreen)	CoVi Tool Single Process	CoVi Tool Multi Process
Processing Time : **37m**	Processing Time : **22m**	Processing Time : **13m**

코드비전 주식회사
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