Company Introduction Presentation

Tengun-label Ltd.

Tengun-label

Company Introduction Presentation

Company Overview

Company Name: Tengun-label Ltd.

Head Office:

5-15-14 Shinjuku, Shinjuku-ku,
Tokyo 160-0022, Japan INBOUND LEAGUE,
Room 603

Branch Office:

3-1 Setodachi, Hakusan, Ishikawa 920-2331,
Japan Kanazawa Institute
Technology Hakusan Campus
Regional Revitalization Research Institute

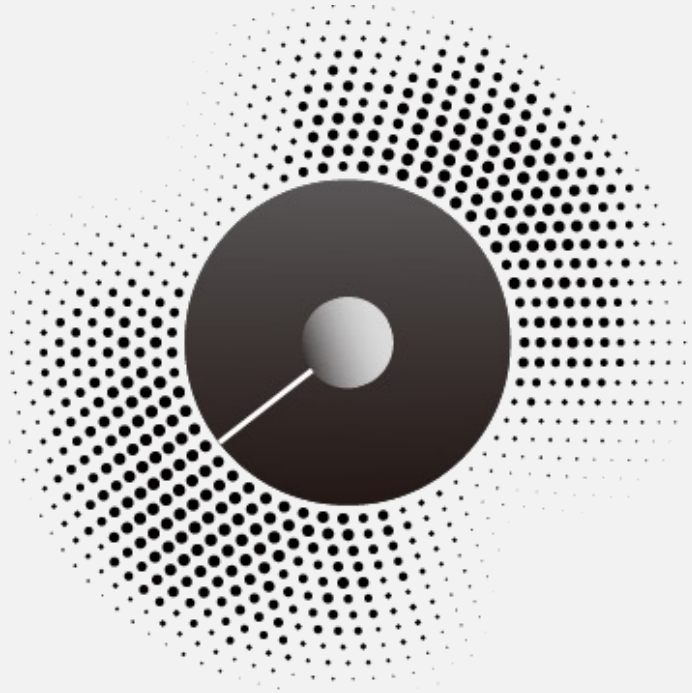
CEO: Hideki Iwasawa

Established: July 15, 2020

Number of Employees: 4

Tengun-label

Implementation of Spatial Recognition Technology in Society



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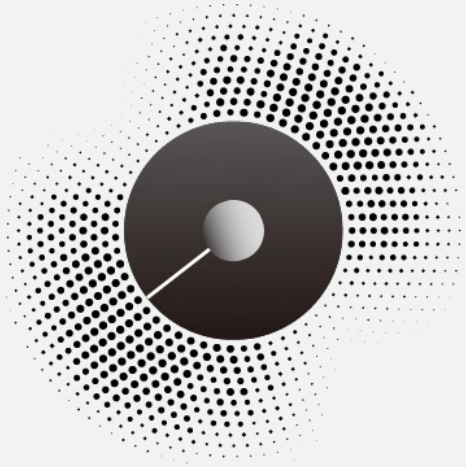
Team Composition



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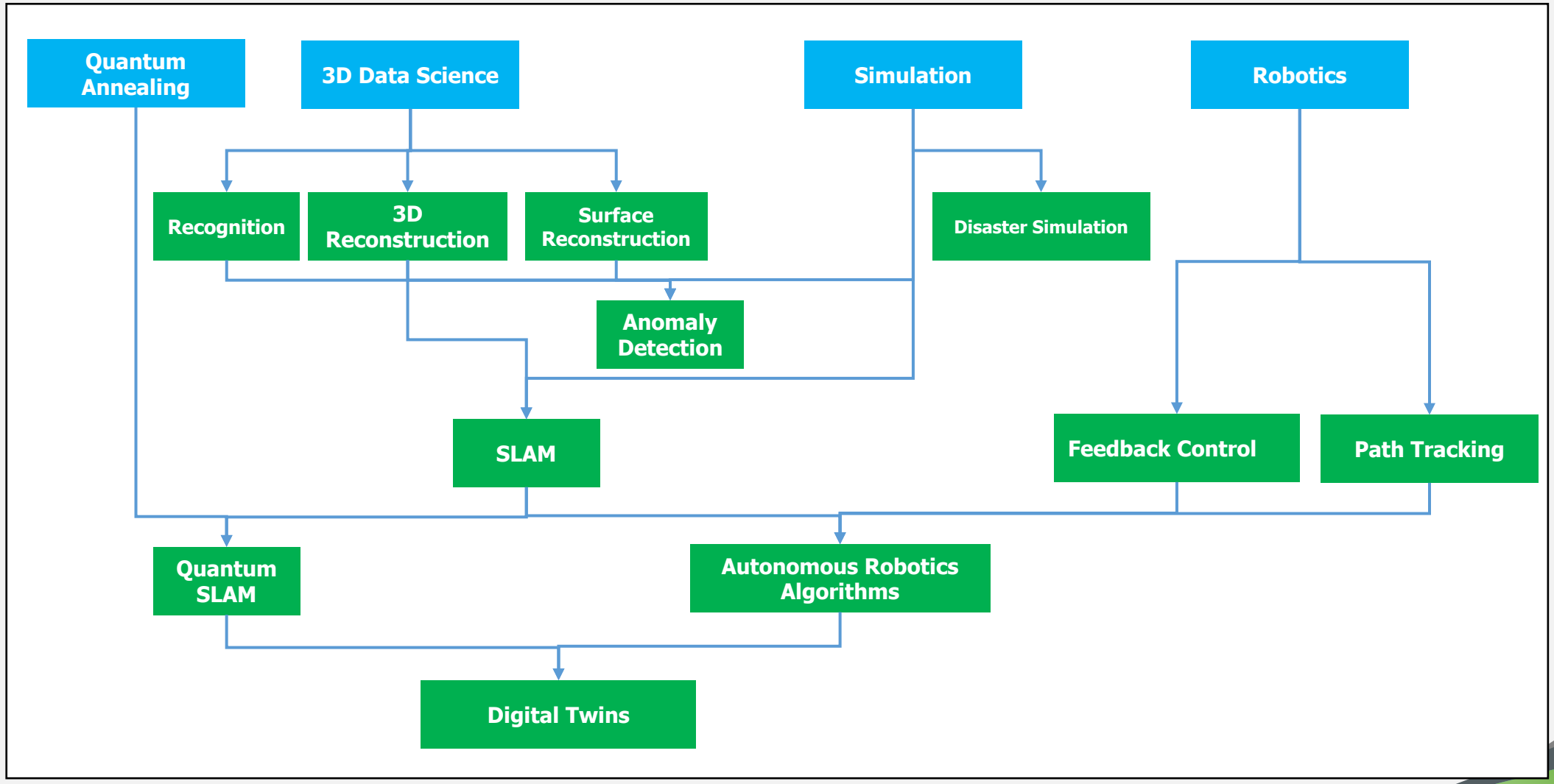
- Data Science Division for Computer Vision
- Engineering Division for Computer Graphics

Company's Core Technology Map



Business Scope

Research and Development Support

Example: Ongoing research on AI algorithms using 3D data in the research department of a major camera manufacturer.

Advisory and Technical Consulting

Example: Providing technical insights to address issues that hindered development for client companies.
Example: Assisting in the establishment of a new business unit at a client company, including technical support and team management.

Development

Example: Developing various technologies, such as automated pallet detection and measurement of pallet position angles and translations in a forklift automation system, LiDAR SLAM, and non-contact arm and leg perimeter estimation algorithms, among others, for factory operations.

Education

Example: Conducting courses to help inexperienced individuals acquire technical skills for client companies.

Installation Art

Example: Exhibiting artwork in Hakusan, Ishikawa Prefecture, that connects space and people through sound using AI and image processing.

Portfolio Presentation(1/2)

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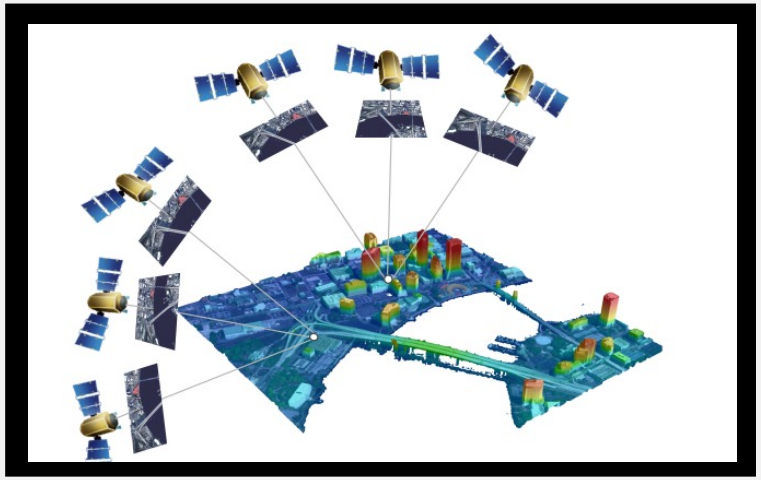
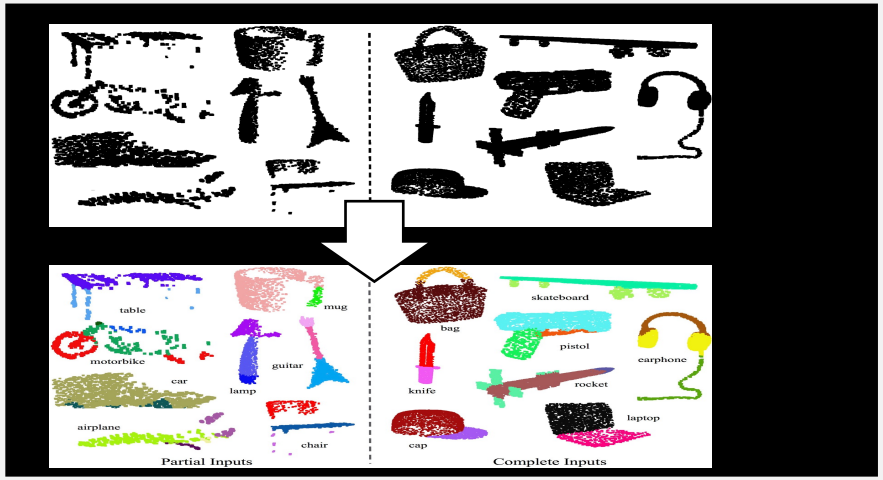
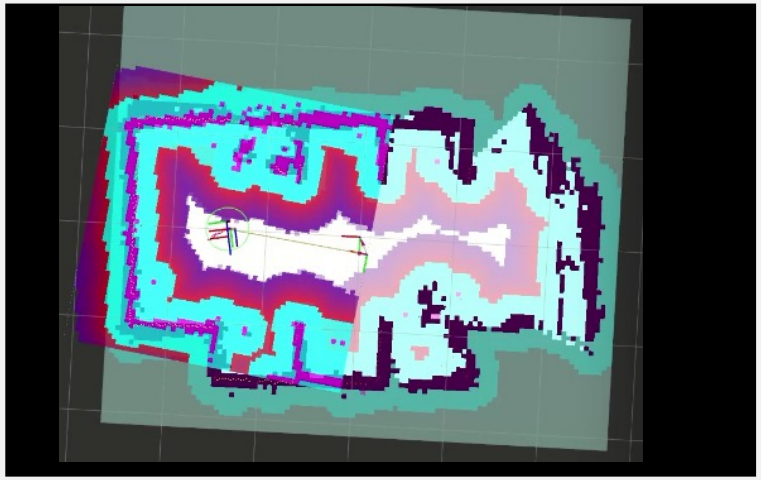
3D Reconstruction



3D Point Cloud Segmentation

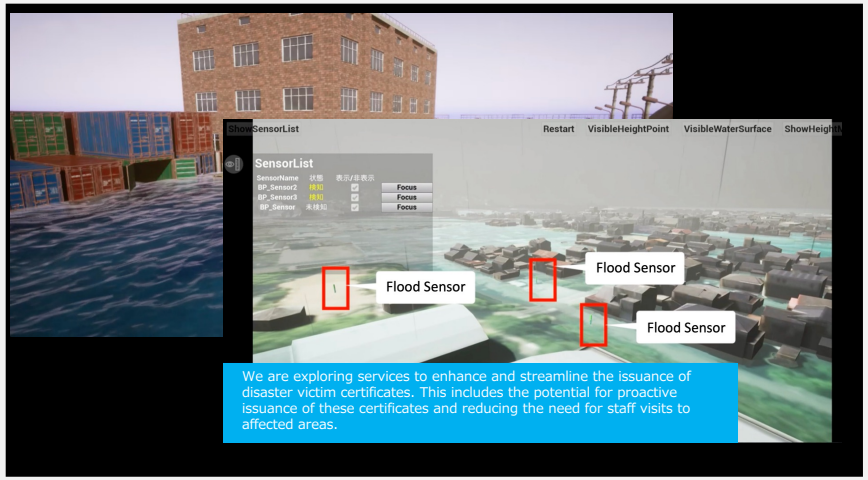


SLAM



Artificial Satellite Attitude Control Algorithms

Disaster Simulation



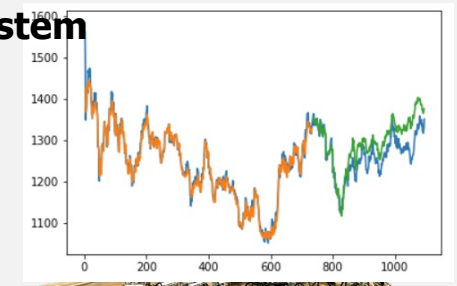
Development of Automated Excavation Algorithms for Heavy Machinery

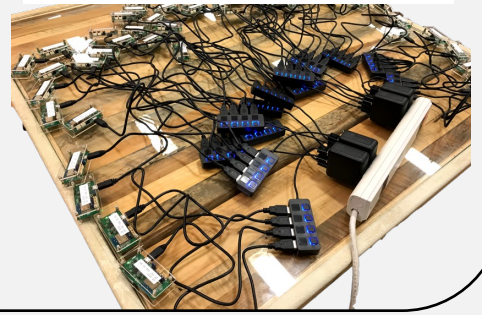
Portfolio Presentation(2/2)

Tengun-label

Free-Viewpoint Video System

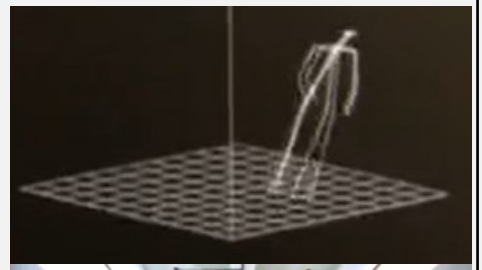
Process Assessment System



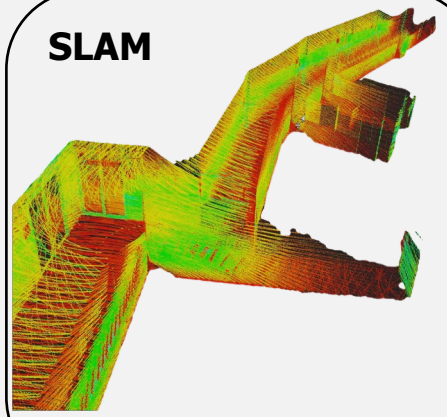


Robotics

2D to 3D Pose Recognition

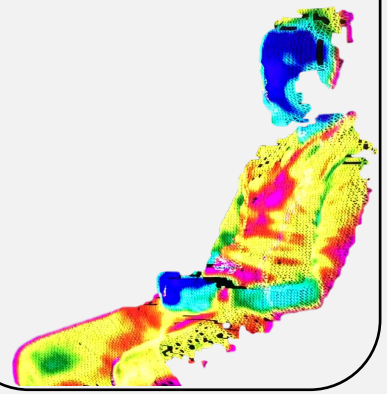


SLAM



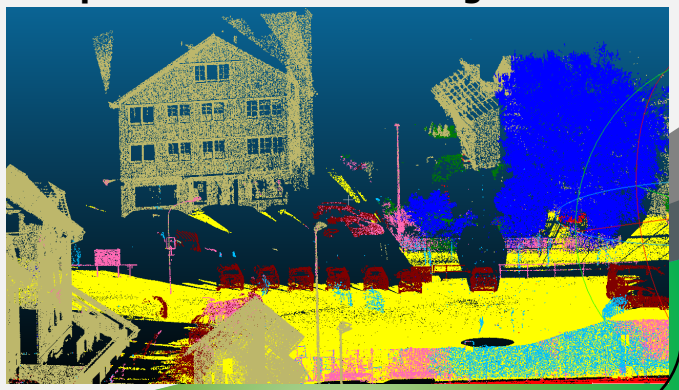
Hand Tracking

3D Thermography



ART

3D Spatial Information Recognition



Partners

At Tengun-label, we engage in research and development of core 3D data analysis algorithms in collaboration with clients from various industries such as "camera manufacturing," "insurance," "robotics," "construction," "space exploration," and more.

Technical Introduction Video

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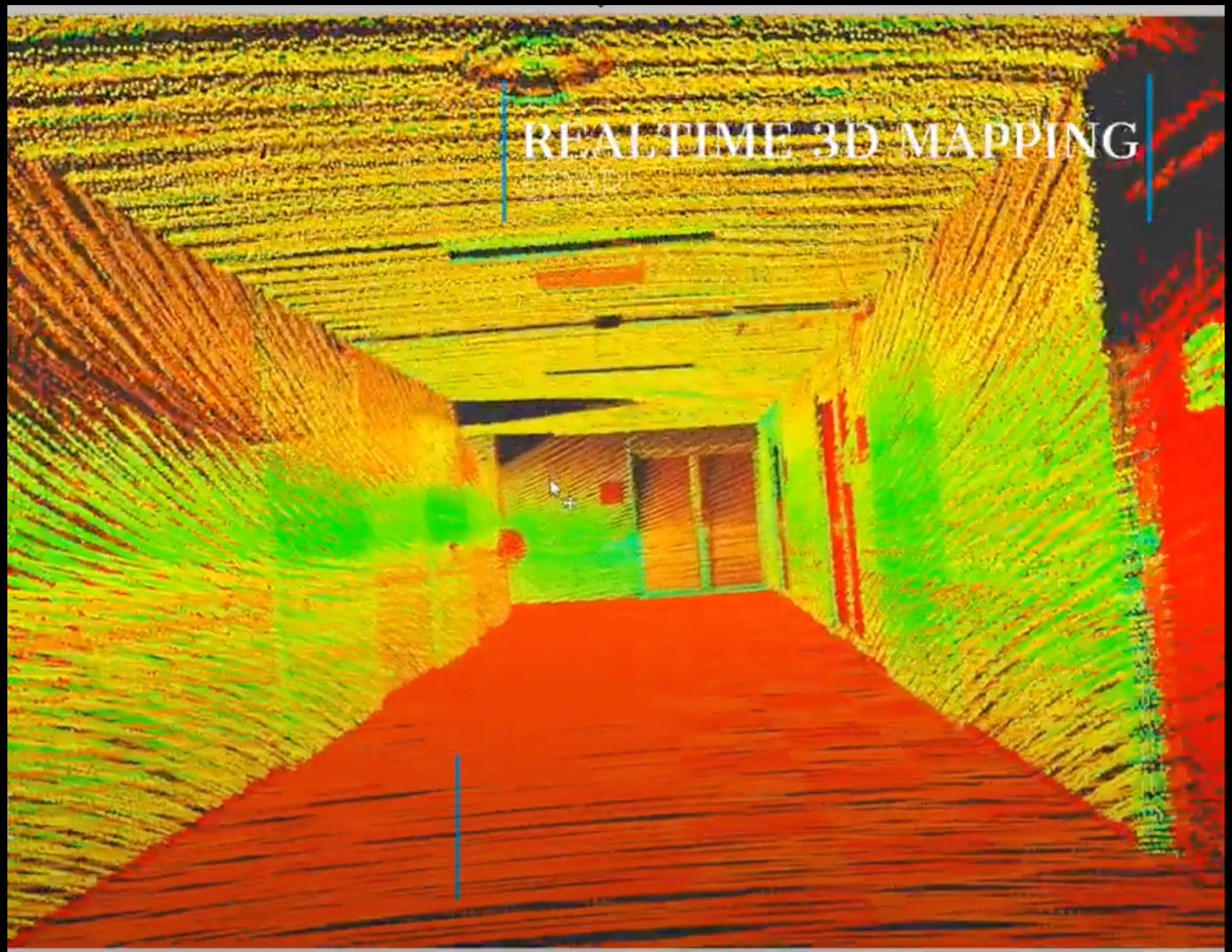


Technical Introduction Video

https://youtu.be/__QPFp8JqOA?si=nBNbBqW2nz9ygXe-

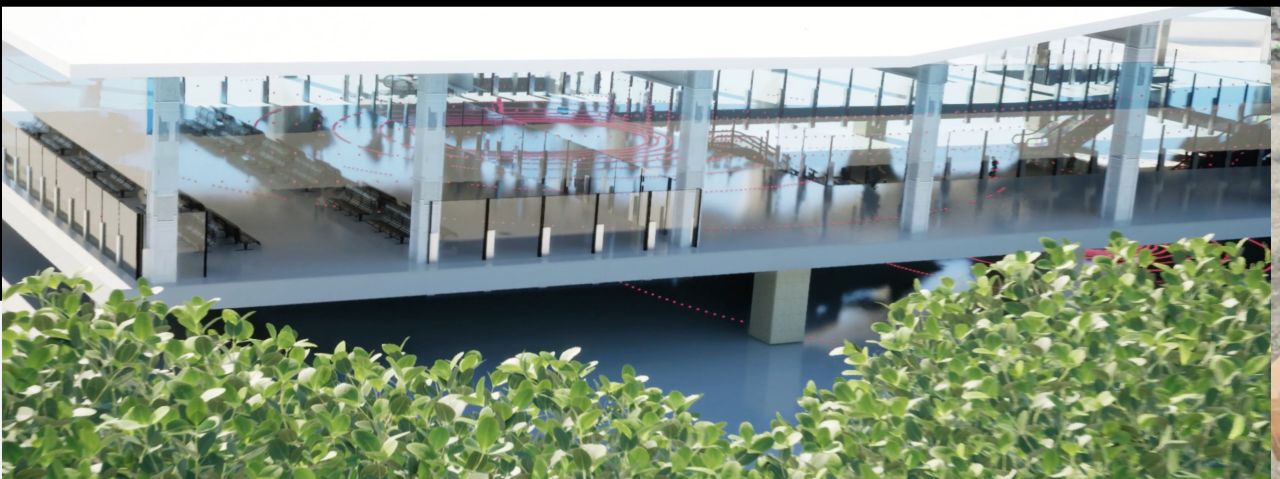
Introducing Tengun-label's In-House Developed Product:

4D-Sim

Tengun-label

4D-Sim

A physics simulation package equipped with simulation functions for various sensor modules required for autonomous driving and self-driving robot development, as well as an automatic Label data generation function necessary for Deep Learning algorithm validation.



4D-Sim (Automation Algorithm Development Phase)

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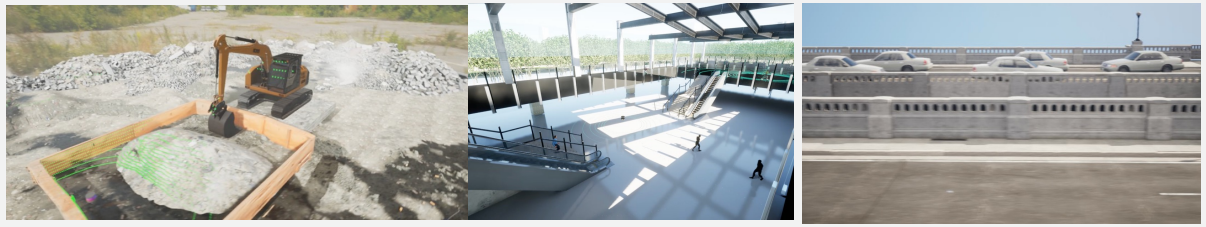
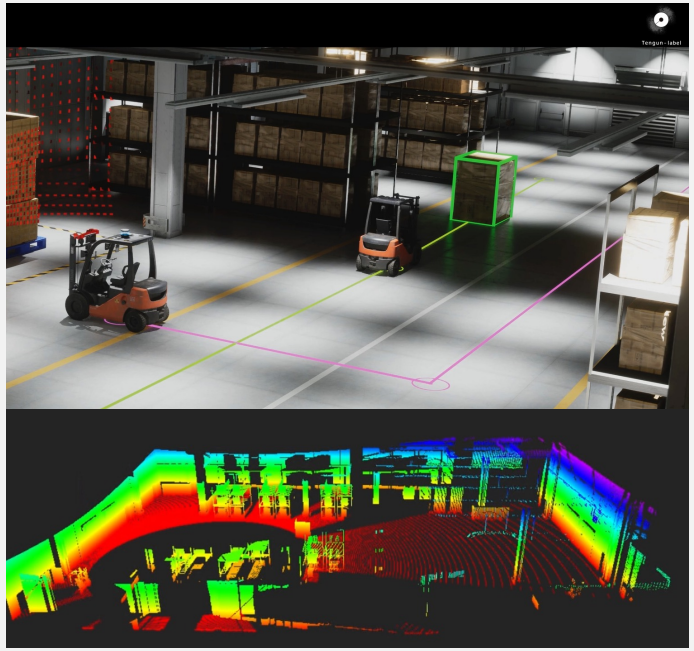
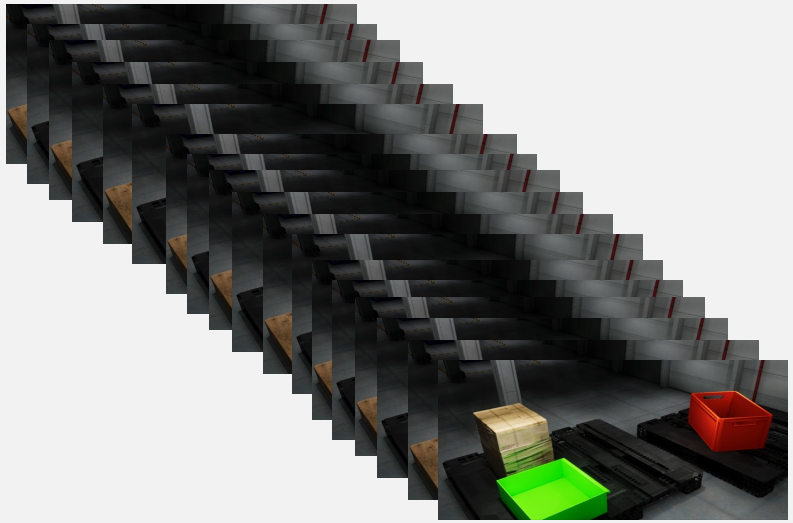
1. Optimal Sensor Selection

2. Test Cases in Various Environments





3. Label Data Generation for Machine Learning Algorithm Verification

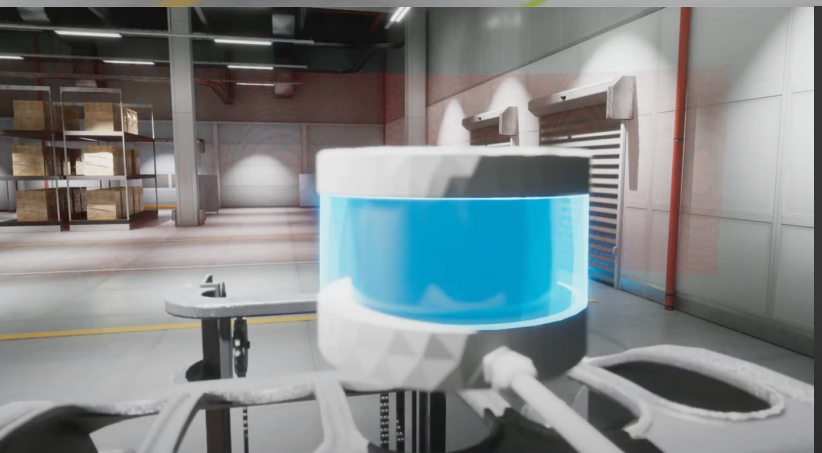


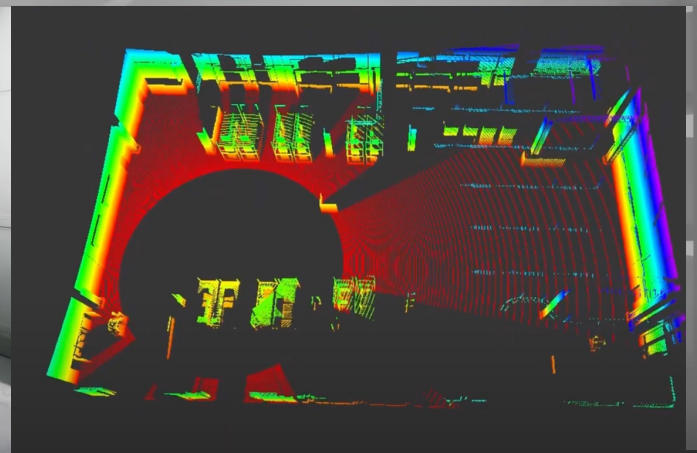
4D-Sim Introduction Video

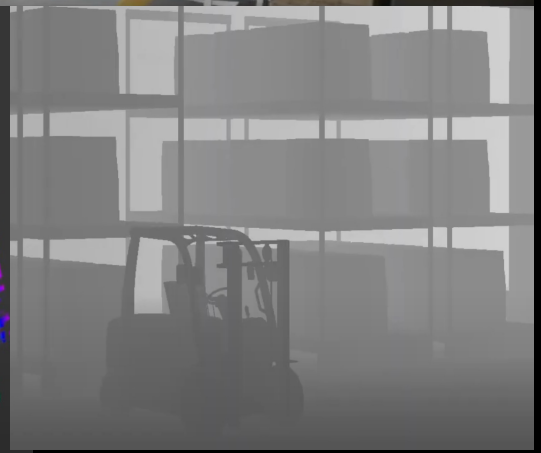
Tengun-label

Technical Introduction Video

https://youtu.be/_glX554cPG8







4D-Sim (Application to Digital Twins)

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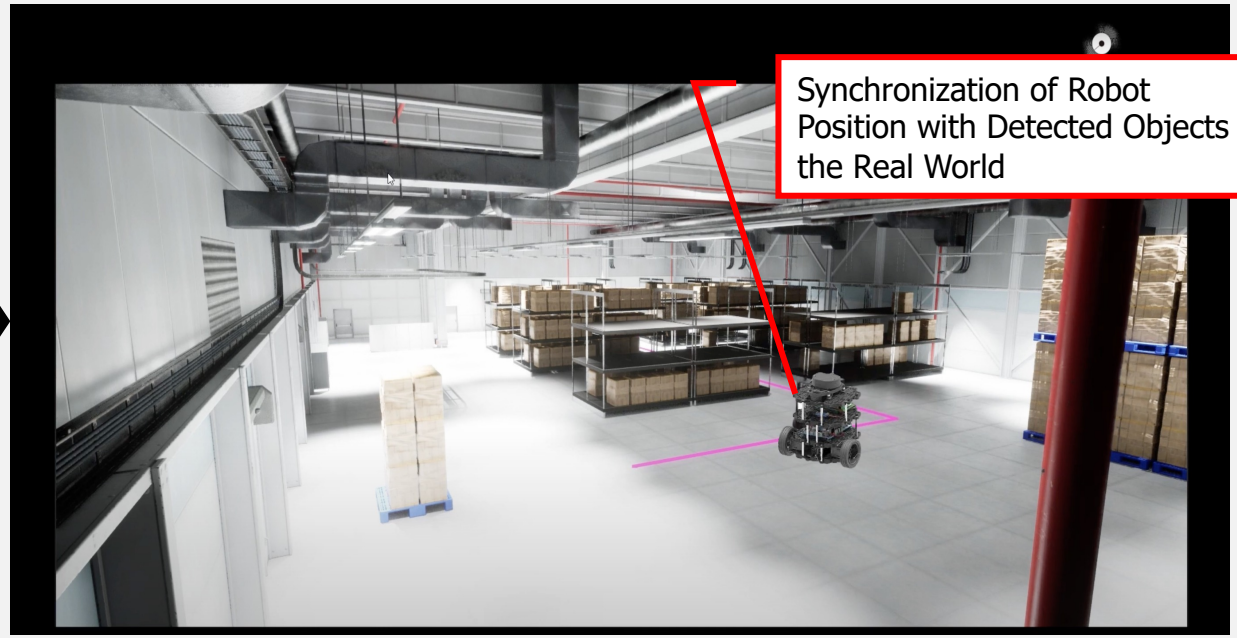
By placing objects detected in the real world into the digital twin space as data, it becomes possible to manage the site digitally and visually without physically going to the field.

Real World:
"Autonomous Robot Navigation" + "Object Detection by Sensors"



4D-Sim: Digital Twin"

Introduction Video: Applications to Digital Twins

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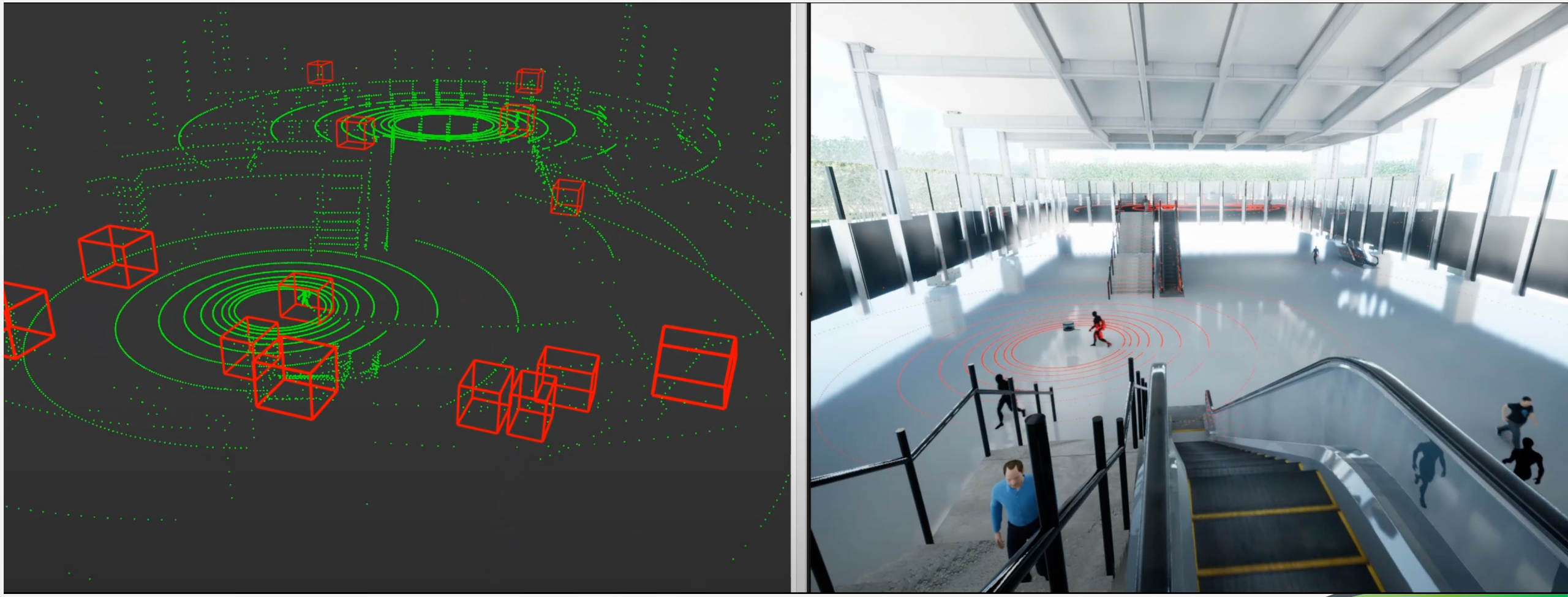
Introduction Video
https://youtu.be/s8iia6DDmDI



Development Case Study
Using 3D Sensor Simulation Technology

Case Study: Automation of Heavy Machinery Operations

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Business Challenge

Heavy Machinery Operations

- "High Labor Costs"
- "Lack of Skilled Operators"

Approach

In this scenario, conducting simulations in a three-dimensional virtual space.

- "Optimal Sensor Selection"
- "Experiments in Various Environments"
- Development of an Algorithm for Optimal Excavation Point Selection

Results

In this scenario, simulations conducted in a three-dimensional virtual space.

- "Optimal Sensor Selection"
- "Experiments in Various Environments"
- Development of an Algorithm for Optimal Excavation Point Selection

Benefits of Implementation

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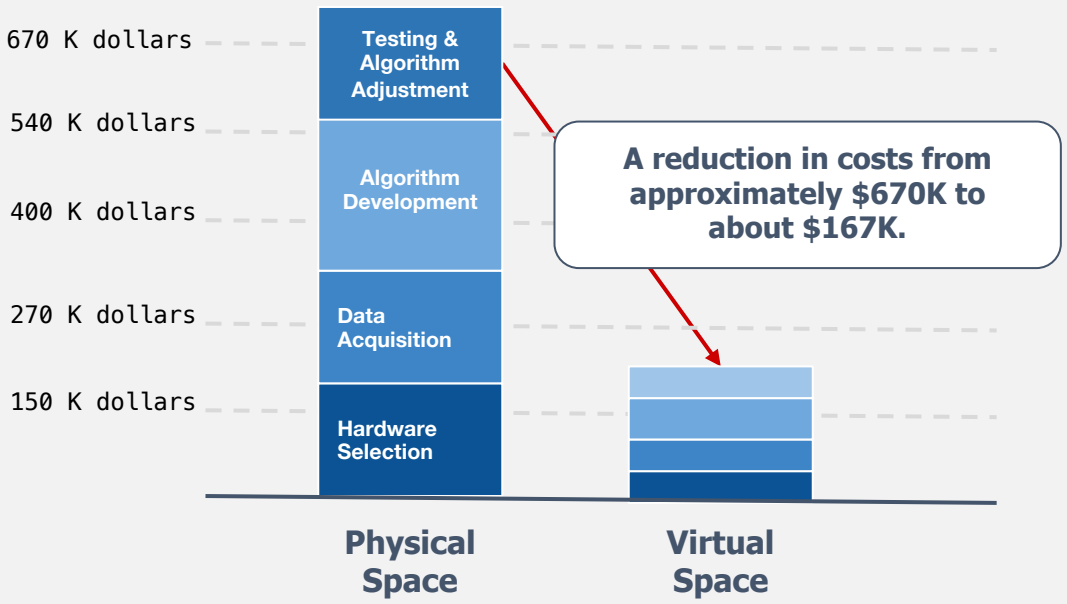
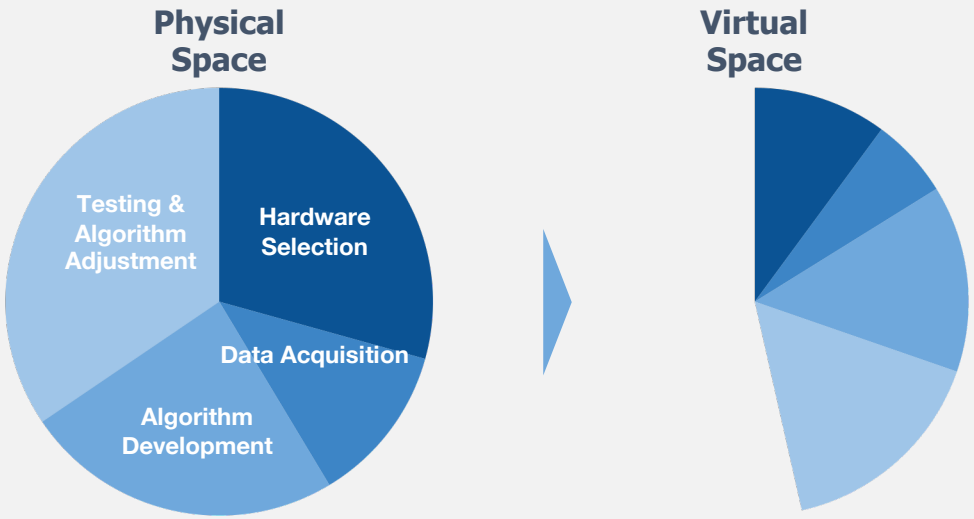
■ The ability to conduct simulations in a 3D space has led to significant cost and time reductions.

Cost



Approximately 2/3 Cost Reduction

Time



Development period of over a year

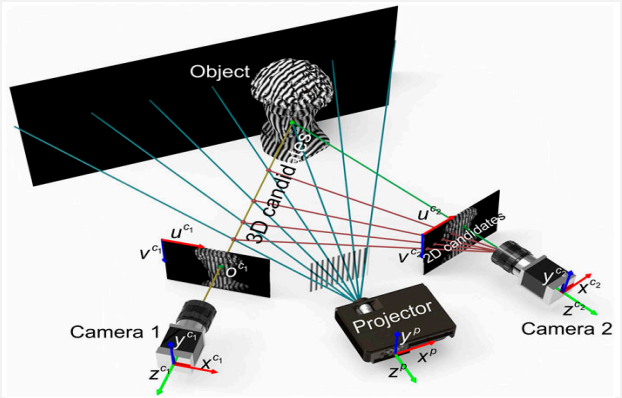
Reduced to 6 months

More than half the time reduced

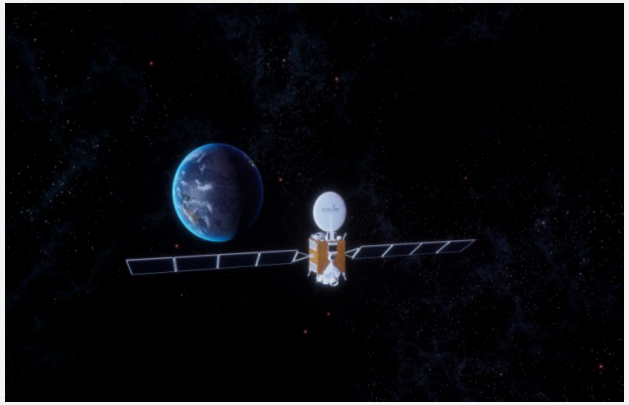
Examples of challenges solved by our virtual space simulations

Outdoor Machinery Localization Algo

3D Measuring Device Algo



Satellite Control Algo



Factory Machinery Localization Algo

Tunnel Digging Decision Algo

Heavy Machinery Digging Automation Algo

Artworks Leveraging Cutting-Edge Technology

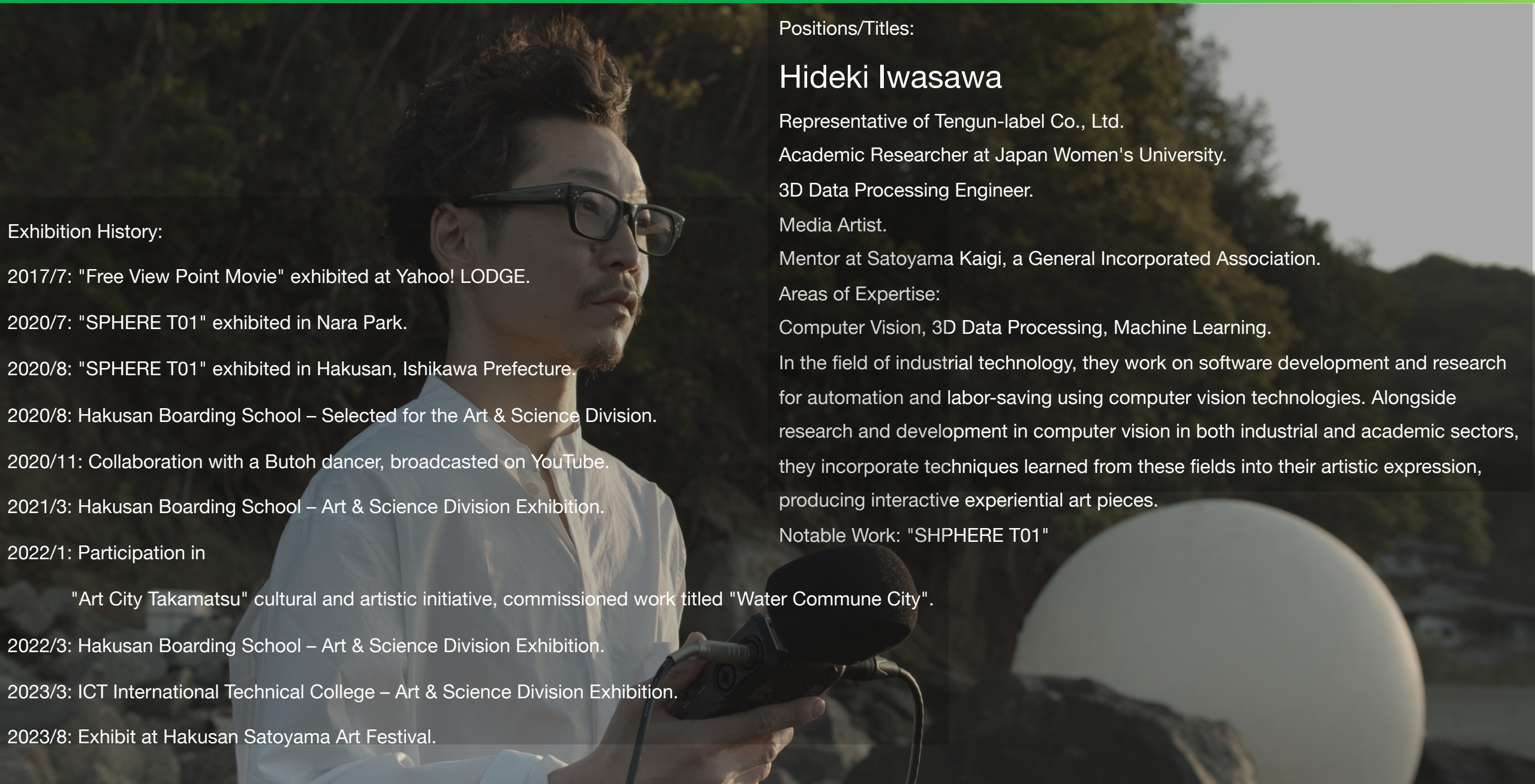
Our company harnesses the power of software, delving into the forefront of computer science.

While many clients seek automation and efficiency, we believe the potential of these technologies extends far beyond that.

Our Art & Science division is exploring expressions that envision the future, pushing the boundaries of today's cutting-edge techniques.

Art Works

Tengun-label



Exhibition History:

2017/7: "Free View Point Movie" exhibited at Yahoo! LODGE.

2020/7: "SPHERE T01" exhibited in Nara Park.

2020/8: "SPHERE T01" exhibited in Hakusan, Ishikawa Prefecture.

2020/8: Hakusan Boarding School – Selected for the Art & Science Division.

2020/11: Collaboration with a Butoh dancer, broadcasted on YouTube.

2021/3: Hakusan Boarding School – Art & Science Division Exhibition.

2022/1: Participation in

"Art City Takamatsu" cultural and artistic initiative, commissioned work titled "Water Commune City".

2022/3: Hakusan Boarding School – Art & Science Division Exhibition.

2023/3: ICT International Technical College – Art & Science Division Exhibition.

2023/8: Exhibit at Hakusan Satoyama Art Festival.

Positions/Titles:

Hideki Iwasawa

Representative of Tengun-label Co., Ltd.

Academic Researcher at Japan Women's University.

3D Data Processing Engineer.

Media Artist.

Mentor at Satoyama Kaigi, a General Incorporated Association.

Areas of Expertise:

Computer Vision, 3D Data Processing, Machine Learning.

In the field of industrial technology, they work on software development and research for automation and labor-saving using computer vision technologies. Alongside research and development in computer vision in both industrial and academic sectors, they incorporate techniques learned from these fields into their artistic expression, producing interactive experiential art pieces.

Notable Work: "SHPHERE T01"

Sphere-T Series

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There are moments when words move our hearts.

There's a joy in conveying our feelings to someone through words.

On the other hand, there are times when words can feel limiting. The more we layer our words, the more we may feel the essence of our thoughts slipping away, elusively.

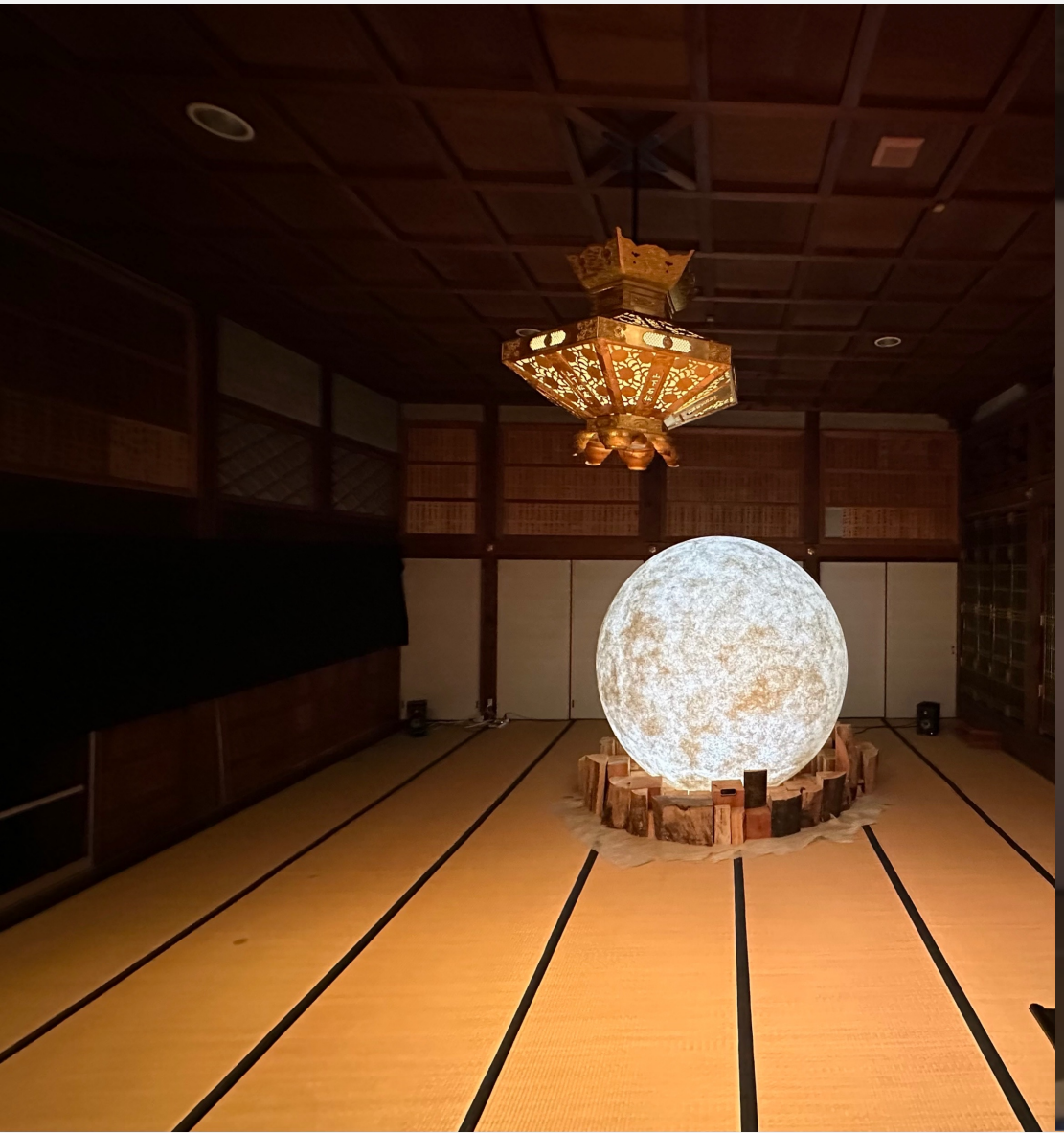
That's why we wish to express moments that are not bound solely by words but are felt with all five senses.

From such a sentiment, this was born.

Promotion Video

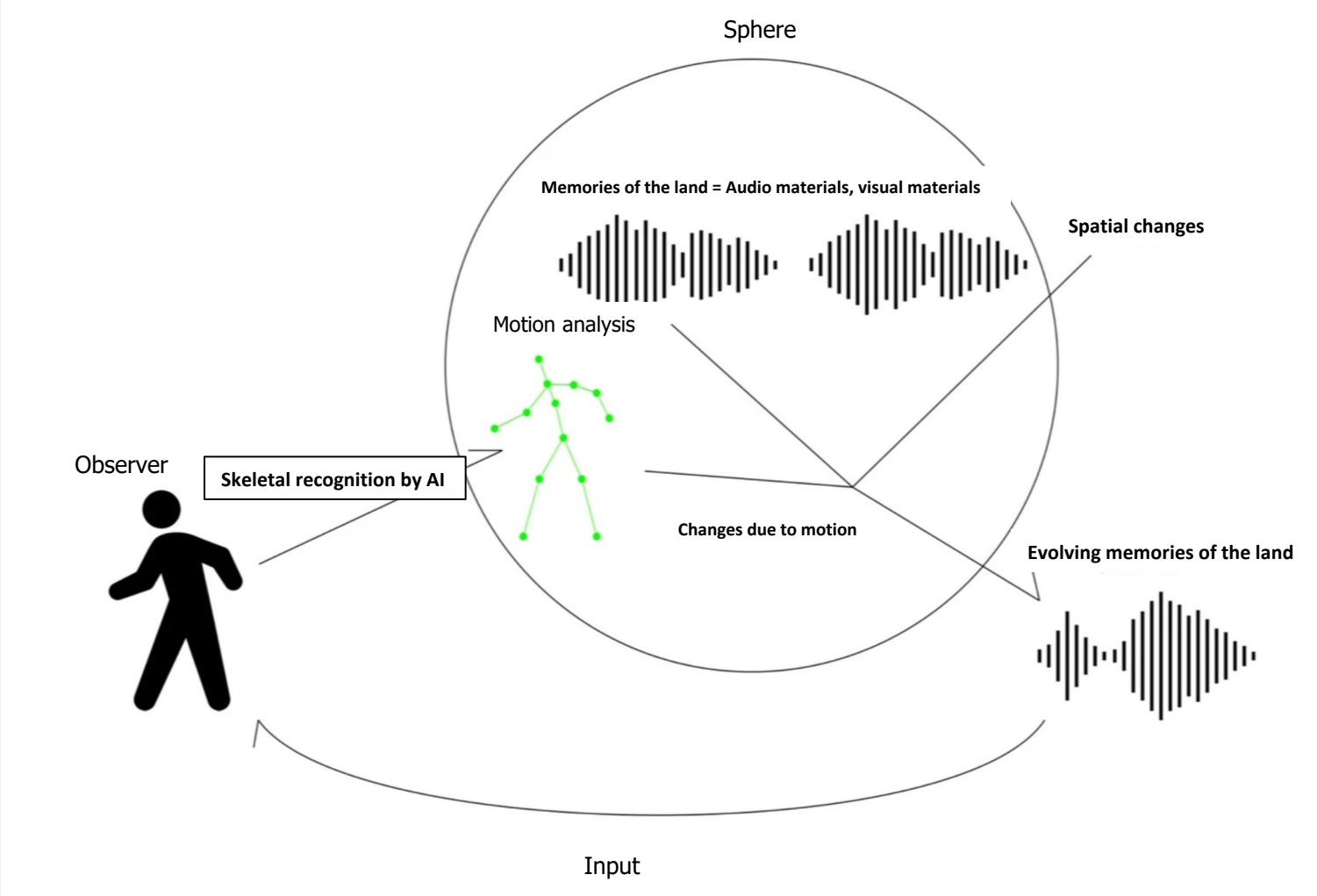
https://youtu.be/c_UeM1pitgk?si=Xp5cxIEuj6DpsIRL

Mentor for the Art Festival's Organizing Committee and exhibitor of artworks.

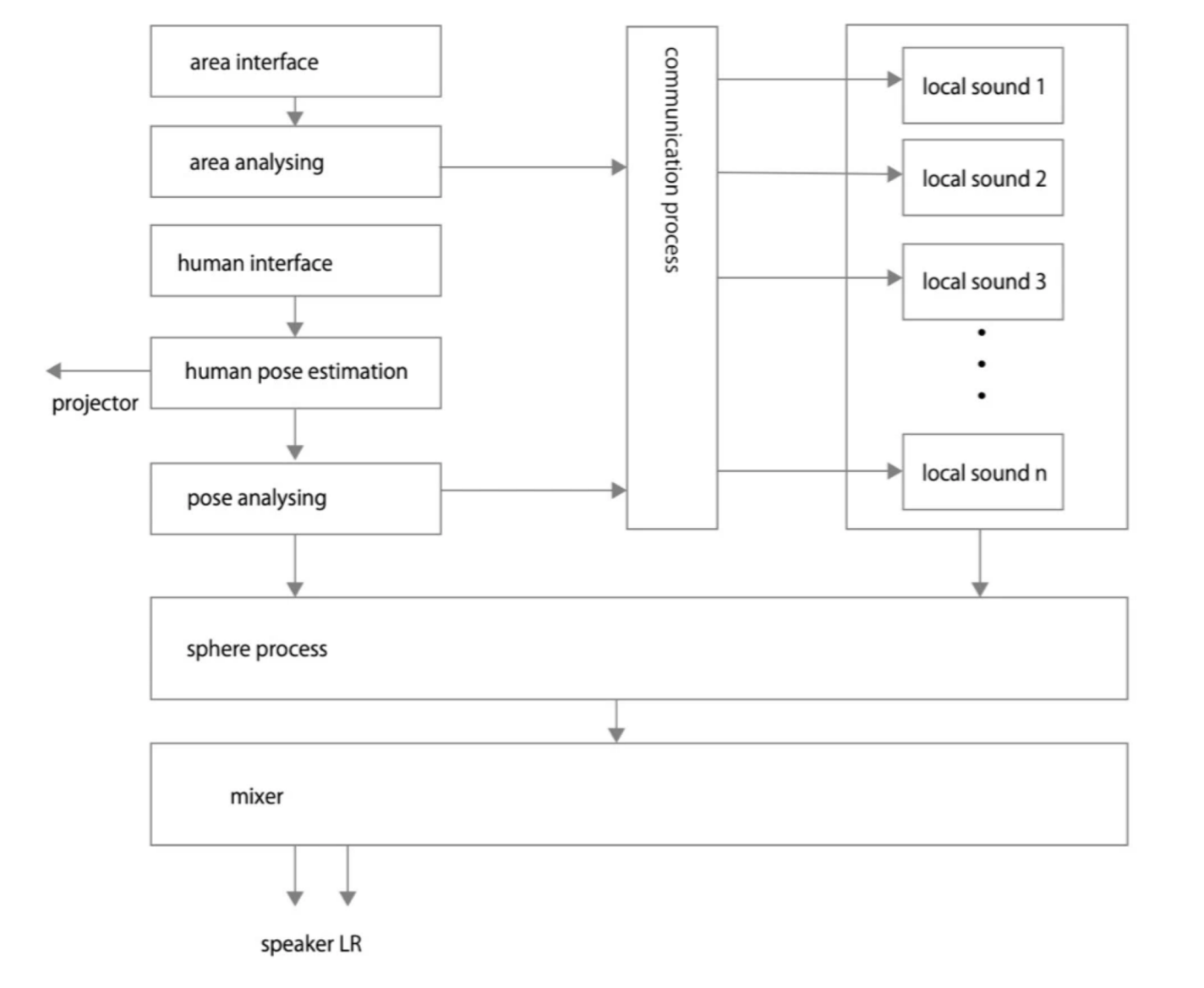


【Sphere-T01】 Overall Structure Diagram

This artwork estimates the viewer's skeletal structure in 3D and alters the sound and visuals, which represent memories of the land, based on their movements.
In response to these changes, the viewer adjusts their movements.
This cyclical interaction suggests the evolving relationship and mutual influence between people and cities.



【Sphere-T01】 Module Configuration Diagram



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