SEADRONIX

AVISS

**AI Port Monitoring and Management System**

NAVISS

AI Ship Monitoring and Navigation System

SEADRONIX

Leading innovation in the maritime industry through state-of-the-art AI technology.

Real-time situational awareness
based on sophisticated data analysis
for a safer and a smarter maritime industry.

Speed
8.0
kn

Depth
22
m

▲ 32 m
🚢 20 m
▶ 122°
🚢 50 m
▲ 68 m

14 cm/s   29 cm/s

26.9 m   34.5 m
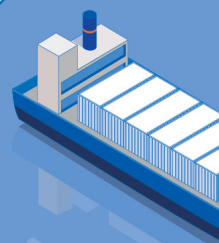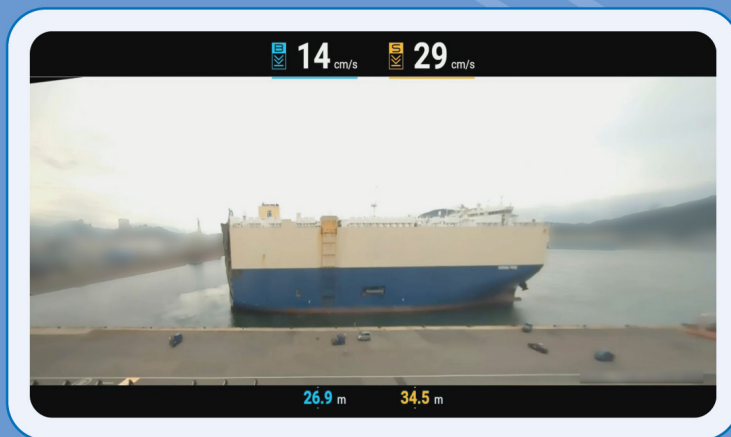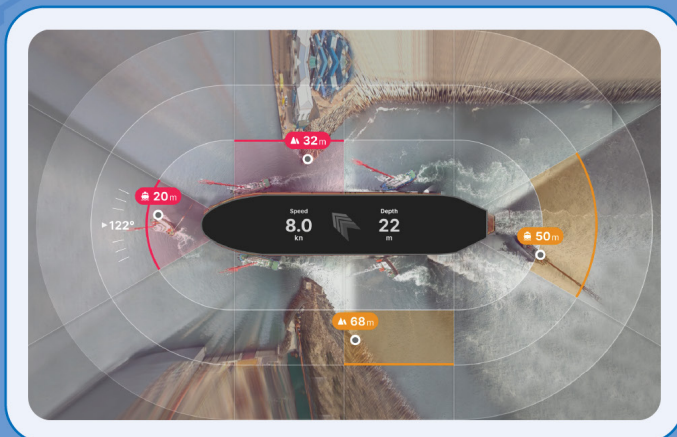
SEADRONIX

Seadronix develops specialized recognition AI solutions for the maritime environment and innovates the shipbuilding, shipping, and port operation industries. Our smart solutions enable safe and efficient piloting and berthing in areas with a high risk for accidents. We continuously develop our technology and products to achieve our end goal of autonomous ship navigation. Seadronix will continue to innovate as a leading company at the forefront of maritime smart technology.

Patents and Partners

Seadronix registers 3 international (US) and 14 Korean patents for self-autonomous ship and smart port technologies. Major port operators and shipping companies are the customers of Seadronix's advanced solutions applying these technologies.

Core Technology

Our advanced AI technology can recognize diverse marine objects using video images. Additional data acquired through different sensors are fused and provide highly accurate information to the user in real time.
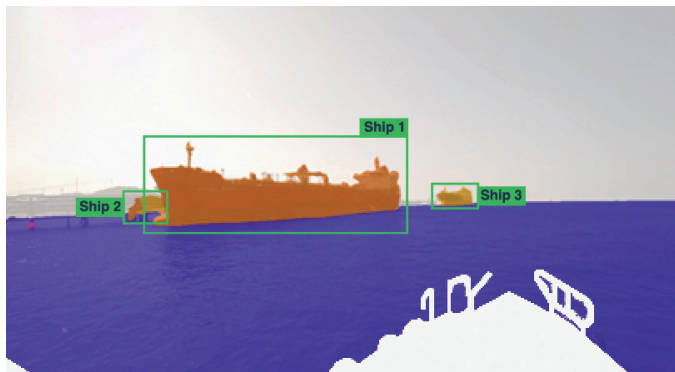
1 Marine Environment and Object Recognition AI Technology

Seadronix's cutting-edge marine environment-specialized artificial neural network is based on massive, accumulated data. It accurately recognizes the shape of objects, such as ships or workers onboard ships, during navigation and berthing, to the pixel level.

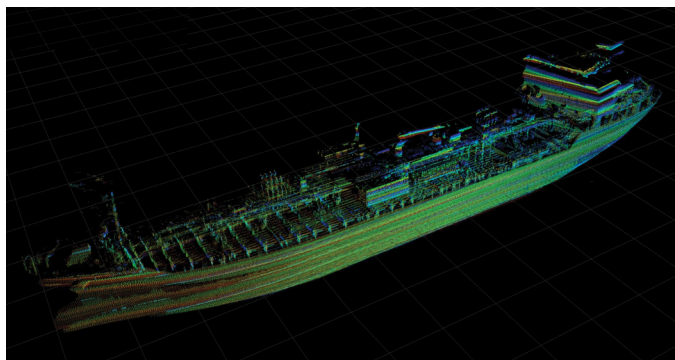1-1 Workers Onboard Ship Recognition

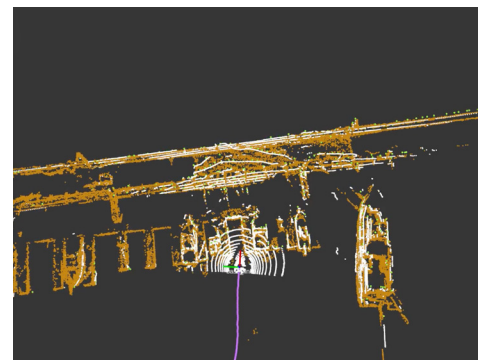
1-2 AI Recognition During Navigation

2 Sensor Fusion

Maritime objects can accurately be recognized by fusing data acquired through different sensors, such as LiDAR and RADAR, with image-based object recognition.

2-1 3D Modeling with LiDAR Scanning

2-1 Local Mapping

SEADRONIX

AVISS

AI Port Monitoring and Management System

AVISS monitors the surrounding area of berthing ships and provides real-time berthing status data to stakeholders. In addition, it increases operational efficiency and safety by supplying port operation analytical data from the time of ship arrival to departure.

1 **AI-Enabled Real-Time Port Status Analysis**

Provides data for port operations by monitoring berth situational information

2 **Easy Access to Service**

Wireless communication and web-based service
Access the service anywhere, anytime via mobile devices

3 **High Performance Standalone Type**

Optimized for maritime environment data acquisition and real-time AI analysis
Embedded processor with AI algorithm

4 **Easy Installation**

Simple installation on existing port facilities without additional construction

System Architecture

An embedded processor analyzes the information obtained from the AVISS sensor module, transmits the data to a server via the telco network (LTE / 5G), and provides it to the user in real-time on the AVISS web service.

Sensor Module → Telco Network / Server → PC & Mobile Devices

Service Key Features

1 **Real-Time Berth Monitoring**
  • Events log & alarms
  • Scheduling - berth assignment, etc.

2 **Tracking Location of Ships Scheduled to Berth**
  • Estimated time of berthing (ETB) analysis
  • Real-time ship route tracking and notification (Zone)

3 **Berthing / Departure Process Information Analysis**
  • Approaching ship speed, remaining distance, etc.

4 **Berth History Management**
  • Berthing video, record, and review of navigation information

5 **Port Operation Statistics**
  • Occupancy analysis by berth
  • Berthing speed by ship

6 **Additional Detection Features (Alarm / Notification)**
  • Berth collision detection
  • Worker / fire detection

Benefits

Safety
Increased Work Safety
Active real-time monitoring and analysis reduces the risk of accidents

Analysis
Improved Port Productivity
Video, tracking information, and occupancy status analysis (report) of incoming and outgoing ships

Operation
Optimized Berth Operation
Optimize operations through accurate berthing/departure forecasting and real-time berth status monitoring

Access
High Accessibility
Web-based service - easy access from anywhere for various port stakeholders

Installation References

AVISS systems are installed and operated in major Korean ports (Busan, Ulsan, Incheon, etc.)
Installation is possible in diverse berth types (container, chemical, general cargo, etc.)

Ulsan

Busan

SEADRONIX

NAVISS

AI Ship Monitoring and Navigation System

NAVISS uses module sensors to construct an around-view image of the ship. It enhances the ship operator's awareness of surrounding dangers and assists during navigation in high-risk collision areas such as ports and narrow waterways in real time.

1   **AI Real-Time Navigation Status Analysis**

Provides navigational information by monitoring the area around the ship

2   **Installation on Various Types of Ships**

Retrofit installation support

3   **Designed for Low Latency**

Real-time video image optimization through embedded processor

4   **Wiper**

Suited for marine environment conditions - snow / rain / fog / etc.

System Architecture

NAVISS's embedded processor analyses the information acquired from the sensor modules, transmits the data to the server through the onboard network, and provides real-time services to the bridge monitor.

Sensor Module   Network / Server   Monitor

Service Key Features

1 Real-Time Navigation Video Image
- The video image acquired by multiple sensor modules is provided in a top-view
- Individual video feeds provided from each sensor module

2 Situational Information
- Distance information for objects surrounding the ship
- Nearby objects collision risk detection and alarm

3 Worker / Intruder Detection
- Detect workers and outside persons within the monitored area
- User alert

4 Utilize Real-Time Data
- 360° around view and object distance information
- Recorded data review

Benefits

Safety

Safe Navigation Assistance

Safe navigation in areas with high risk of accidents (narrow channel, coastal waters)

Analysis

New Situation Information

Information analysis of various objects that cannot be recognized by existing sensors

Efficiency

Improve Navigation Efficiency

Immediate awareness and response capability to events occurring in blind spots through real-time live video

Management

Navigation History Management

Supports decision making by review of recorded navigation data (in case of accident, etc.)

Installation References

Bulk carrier, oil tanker, PCTC, etc. - retrofit and shipbuilding installations.

Oil Carrier, 330m

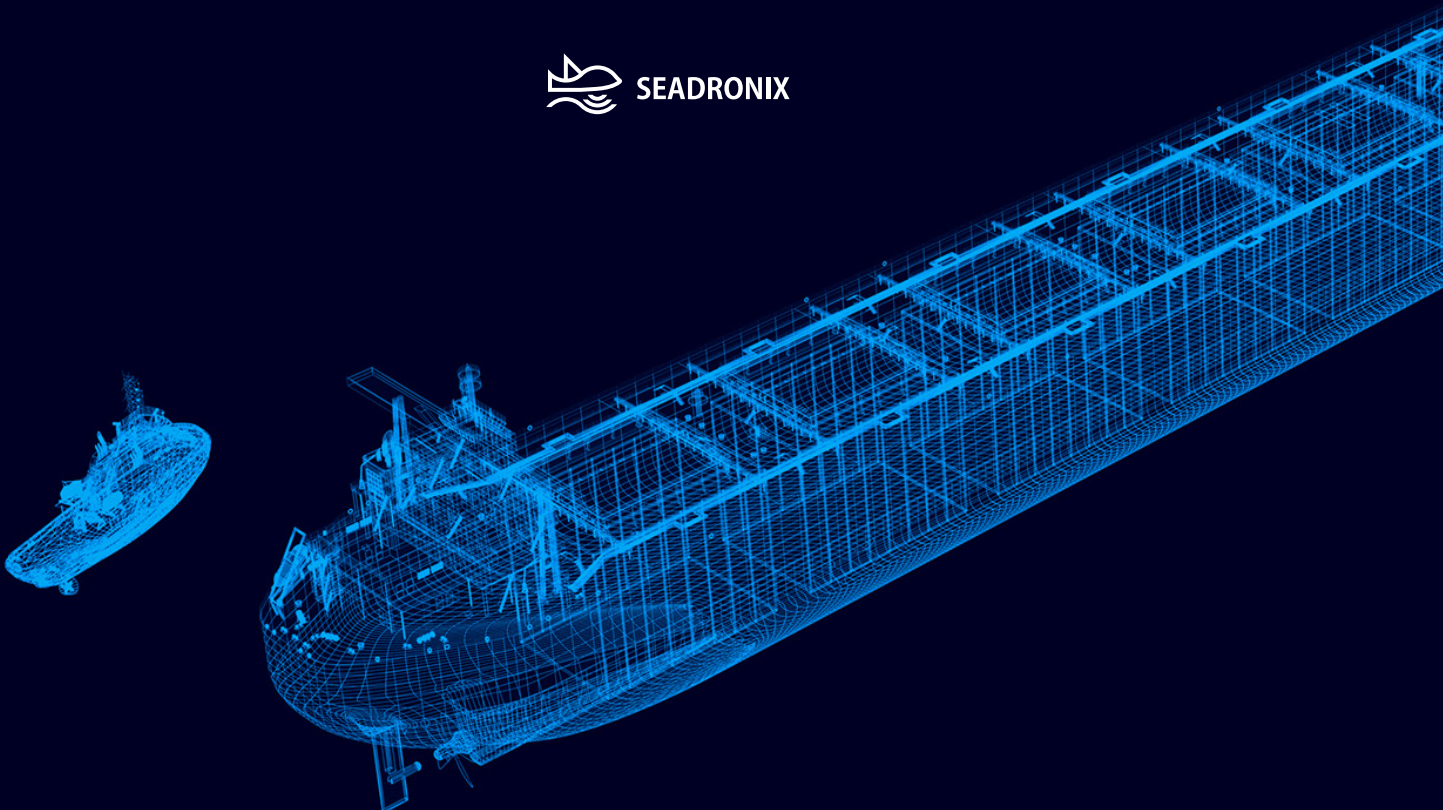Bulk Carrier, 273m

H/W Spec

Sensor Module

	NAVISS	AVISS
# of Camera	1	1~2
Dimension	W 150 x D 232 x H 112 (mm)	
Weight (w/o Jig)	3kg	
Dust / water resistance	IP 68	
Operating Temperature	-20℃ ~ +60℃	
Power Consumption	Max. 30W (PoE)	
Processor	Embedded Processor for Deep Learning	

System Configuration

			NAVISS	AVISS
		LiDAR		
		# of Lines	16	32
		Dimension	φ 109 x H 80.7 (mm)	φ 97.5 x H 100 (mm)
	Sensor	Weight (w/o Cabling)	~ 0.87 kg	~ 1.0 kg
Additional		Range	~ 150m	
		Dust/water Resistance	IP 67	
		Operating Temperature	-30℃ ~ +60℃	
		Power Consumption	12W	
	Equipment		Wiper (Optional)	Explosive Proof Type (Optional)
Workstation			Server	Cloud / Server
Network			Gigabit Switch	5G or LTE Router / Gigabit Switch

PORT-TO-PORT LEADING
AI COMPANY

SEADRONIX

SEADRONIX