Annex A: Grant Recipients for Smart Port Challenge 2019

FOCUS AREA: Efficient & Intelligent World Class Next Generation Port

1. ABEJA

ABEJA is one of the first start-ups specialising in Machine Learning (ML) and Deep Learning (DL) in Asia. The organisation has deployed over 200 Artificial Intelligence (AI) projects across various industries and specialises in implementing computer vision solutions. For the maritime industry, ABEJA is using video analytics and deep learning to automate many routine tasks that are manual and tedious. With improved operations, companies can help their employees achieve greater productivity and focus on higher-level endeavours. Backed by investors including Google, Nvidia, Salesforce, ABEJA was the only Japanese start-up to be commended by CB Insights (AI 100: The Artificial Intelligence Start-ups Redefining Industries).

https://www.abejaglobal.com/

2. KoiReader Technologies

Checking and cross-referencing financial and declaration documentation is a labour-intensive process in the maritime industry. KoiReader has developed an innovative machine learning visual recognition system that extracts contextual data from documents (image and text) and enters it into legacy and ERP systems as actionable operational data. This improves the accuracy of filling up logistics data for regulatory clearance, brings down the cost of document processing from US$2.50 to less than few cents per page, and reduces operational risks such as those associated with mis-declaration of dangerous goods.

www.koireader.com

3. Megapixel

A massive amount of communication goes on as part of daily vessel operations. However, the absence of a system to track and tag real-time and past information makes the retrieval of historical data difficult and time consuming. Harnessing its rich development experience, Megapixel has developed a solution called Globarius which has already been successful in the construction industry and is being adapted for the maritime industry to provide port/terminal operators with a knowledge repository, using progress tracking tools to collect, organise and report data.

www.megapixel.sg

FOCUS AREA: Smart Fleet Operations & Autonomous Vessels

1. ASA Development

ASA Development, through a decade of refinement and testing, has created the Contego Productivity Platform, a tool that has helped many organisations improve their operational efficiency, through standardisation of process and centralisation of data from remote sites. Contego Audit has helped many offshore and maritime companies make sense of previously fragmented processes. Contego Document Management has enabled organisations to mobilise management systems so all company information is at the fingertips of the people who need it the most. ASA's team is dedicated to making the maritime industry more efficient through the use of tools that make life easier.

www.contegoforbusiness.com

2. C-LOG

C-LOG is pioneering data collaboration in the maritime industry by making inter-organisational sharing of crew documentation easier and faster while respecting the data privacy of the seafarer. Addressing a challenge to develop a crew-centric platform that supports self-management and career development within the maritime industry, C-LOG is creating a solution that digitises current paper-based processes by leveraging blockchain and artificial intelligence (AI). This would save the maritime industry between 30-50% of costs related to handling crew documentation.

www.c-log.io

3. Cerekon

Efficiency, safety and productivity are key concerns when it comes to the inspection and maintenance of vessels, particularly entire fleets. As a smart wearables solution provider, Cerekon's AI based, "Voice-driven Handsfree Inspection & Remote Support System", enables field personnel to conduct inspections, capture issues, conduct audits, diagnose problems and train staff, without the use of handheld devices or paper based systems. By wearing the specially designed wearables, personnel can safely conduct audits, identify leakages/cracks, access digital checklists, auto-generate job reports, by using simple human voice commands and live stream their work to seek remote assistance, without the need for bulky devices, leaving their hands free to carry tools/equipment or hold on-to hand rails for safety.

www.cerekon.com

4. Dravam

Dravam's innovative fuel quality monitoring solution is an early detection system, scanning the entire bunker transfer for contaminants and currently providing near real-time information about the fuel quality. Installed seamlessly onto a vessel, this patented solution increases efficiency and assurance of bunkering operations, and addresses the industry's need for faster fuel quality testing. With Singapore being the world's first port to implement mass flow metering, to ensure quantity of bunker, the implementation of enhanced quality monitoring will enable Singapore port to ensure "Q&Q" (Quantity and Quality) of the bunker fuel.

http://www.dravam.com/

5. Kanda

Kanda is creating virtual and augmented reality platforms, coupled with machine learning to address the high costs associated with hiring and training within the maritime industry. Using a photorealistic digital twin of an entire tanker, Kanda is building a virtual reality training session that allows crew members to move around the simulated tanker. Kanda has also created a unique technique that uses machine learning and situational judgment to validate how well a candidate's response correlates to performance as part of the recruitment process.

https://www.kanda.dk/

6. Marified

Building on the success and traction its parent company, Edufied, had gain with its blockchain-based storage and verification solution for the education industry, Marified has created a digital wallet that secures a seafarer's certifications against forgery and is accessible from anywhere in the world. This could reduce the administrative loads of Flag States, port clearance authorities, ship owners, ship management companies and training centres by 90-97%. The use of blockchain

technology also reduces the risks associated with hacking of current digital solutions.

www.marified.network

7. Newton Services Research (local entity of Delvify)

Delvify builds and runs predictive AI models for businesses. Using state-of-the-art, built in-house Artificial Intelligence (AI) tools including computer vision, natural language processing and automated speech recognition we help maritime enterprises clean, categorise and analyse their data to optimise operational processes. We take data such as past customer actions, combine it with third party data to create a forecasting and decision-making platform to recommend actions to vessel operators looking to optimise roll-pools, pricing and loadings.

www.delvify.io

8. Performance Rotors

In-hull ship inspections are both time-consuming and risky due to confined spaces, heights, lack of oxygen or presence of toxic or flammable gasses. By bringing their confined drone technology with AI defect identification and non-destructive testing (NDT) to the maritime industry, Performance Rotors can help to minimise such risks and costs. Their method uses NDT technology in addition to video, to allow for detailed inspection, digitalisation, data science and management, which leads to easier comparison of results for better prediction and maintenance programme formulation.

www.performance-rotors.com

9. Tropical Renewable Energy Engineering (TREE)

TREE supports Singapore's green port initiative by providing novel and innovative solutions towards Digital twin based marine asset health monitoring with real-time capability. TREE's underwater drone-based solution aims to minimise downtime of marine assets by providing early information on potential failures of marine assets, to take timely preventive actions much faster than conventional maintenance methods. TREE also specialises in resource mapping and environmental impact of water bodies and coastal locations using novel sensor integrated surficial robots that provides vital information such as seabed bathymetry, water quality and tidal flow and wave conditions.

www.tree.sg