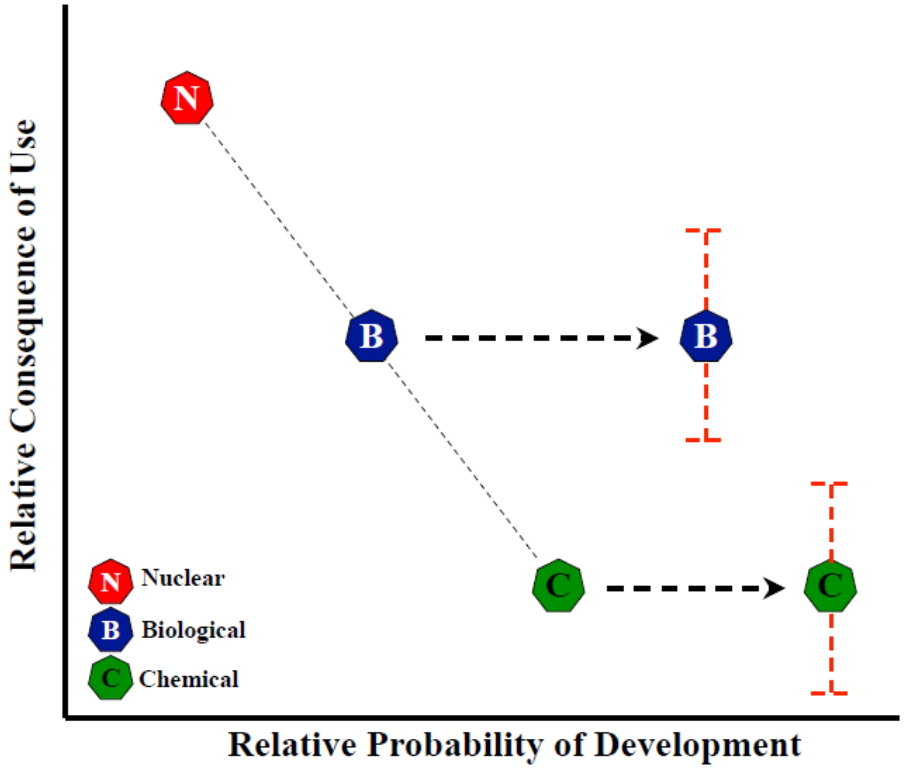
EMERGING TECHNOLOGIES FOR COUNTERING WMD PROLIFERATION IN MARITIME DOMAIN

Ayhan SUNAR, TR, Defence Industry Executive

OUTLOOK

- 90% of world trade with over 50,000 merchant ships trading internationally, transporting every kind of cargo for over 150 fleet registered flags of the World.
- In 2019, 300 marine vessels have been registered fraudulently and sailing in the world oceans with unauthorized flags.
- Global security environment is becoming more complex and threatened with adversary pursuit of WMD, delivery systems, and related CBRNE technologies.
- The dual-use nature of much of the related technology and expertise.
- Rapid technology advances are increasing the potential, variety and ease of access to WMD.

Shifting Risk of WMD Terrorism in next 5 to 10 Years



FACTS & CHALLENGES

- Center of technological gravity is shifting
- Capability gap between commercial and military technologies evaporates
- MSA is key to counter WMD Proliferation
- Governments struggle to keep pace
  - Threats without borders
  - non-state actors
  - Unauthorized flags @sea
  - Ocean of ever-increasing data «A staggering amount of maritime data must be collected, analyzed, and disseminated on an ever- quickening basis to detect threat-related behavior in the maritime domain»

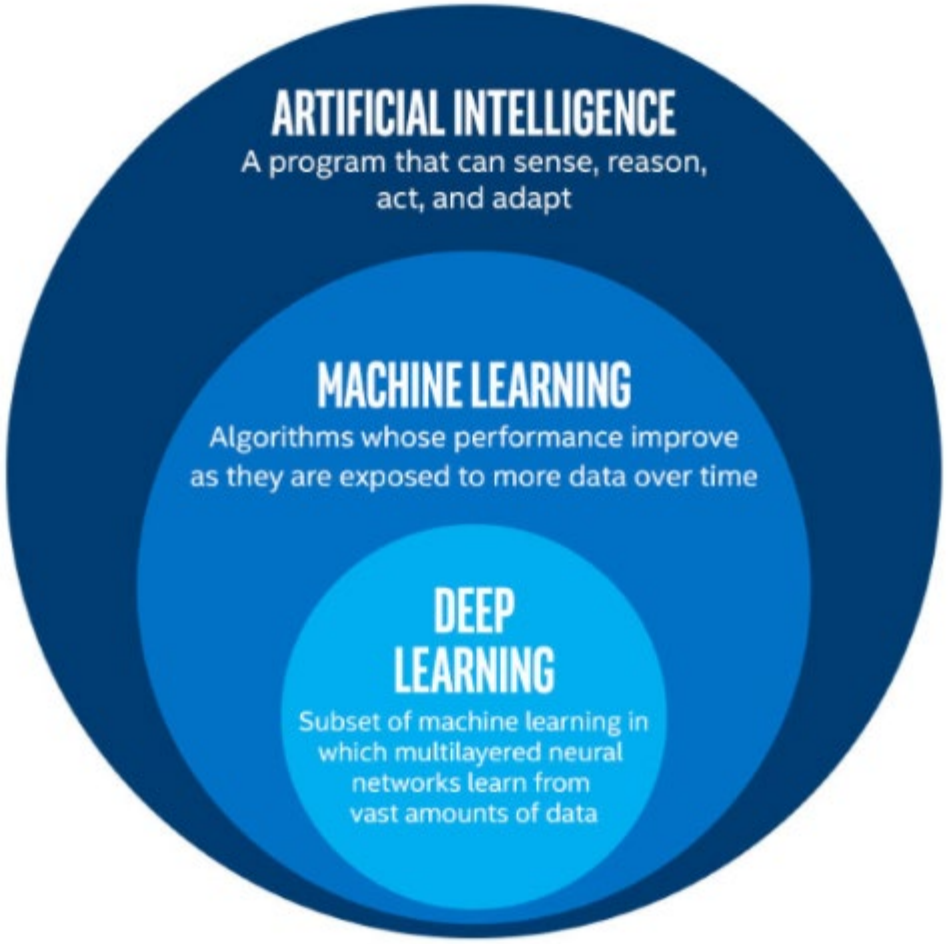
North Korea Conducting Ship-to-Ship Transfers

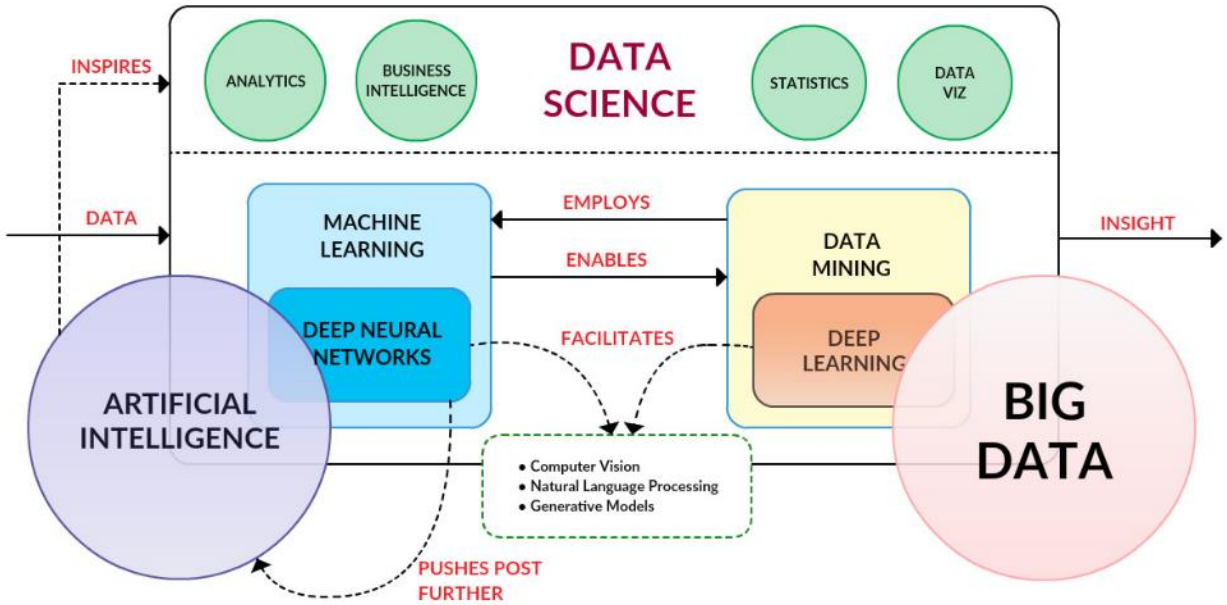
This image is of the Koti, a Panamanian-flagged vessel seized by South Korea in December 2017 for illicitly transferring refined petroleum to North Korean vessels. North Korea is using ship-to-ship transfers to circumvent UN sanctions that were designed to bring pressure on Pyongyang to give up its nuclear and WMD programs.

North Korea Dismantles Portions of Its Nuclear Test Site

North Korea invited foreign press representatives to witness its explosive destruction of portions of its nuclear test site on 24 May 2018.

AI AND BIG DATA





4Vs of Big Data

- ❑ Volume,
- ❑ Velocity,
- ❑ Variety,
- ❑ Veracity

AI & BIG DATA PROJECTS

MARISA

IMPROVED SITUATIONAL AWARENESS

NEW DATA FUSION BASED ON DISTILLED KNOWLEDGE WITH WIDE RANGE OF SENSOR INTEGRATIONS FOR NAVY, COAST GUARD, CUSTOMS AND BORDER POLICE

IBERIAN, IONIAN, AEGEAN, NORTH SEA TRIALS COMPLETED IN NOV 2019.

MARİSAPROJECT.EU

RANGER

EARLY WARNING

TRAFFIC SURVEILLANCE AND SAR OPERATIONS WITH VESSEL DETECTION, RECOGNITION, AND IDENTIFICATION IN TERMS OF BOTH TARGET SIZE AND RANGE

COMPLETED IN 2020

RANGER-PROJECT.EU

EUCISE

INFORMATION SHARING ENVIRONMENT

INFORMATION SHARING ACROSS TRANSPORT, ENVIRONMENTAL PROTECTION, FISHERIES CONTROL, BORDER CONTROL, GENERAL LAW ENFORCEMENT, CUSTOMS AND DEFENSE

COMPLETED IN 2019

EUCİSE2020.EU

AI & BIG DATA PROJECTS

datAcron

BIG DATA ANALYTICS FOR TIME-CRITICAL MOBILITY FORECASTING

DETECTING AND VISUALIZING THREATS, ABNORMAL ACTIVITY, INCREASING THE SAFETY AND EFFICIENCY OF OPERATIONS RELATED TO VESSELS AND AIRPLANES

COMPLETED IN 2018

DATACRON -PROJECT.EU

ROYAL NAVY NELSON PROJECT

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE TO BUILD A “SHIP’S MIND”, ENABLING BETTER DECISION MAKING.

ONGOING

CTİDİGİTAL.COM/OUR-CLİENTS/NELSON-ROYAL-NAVY

US DOD DARPA SIGMA+ MATCH PROJECT

MATCH
MULTI-INFO ALERTING OF THREAT CBRNE HYPOTHESES

MULTIPLE DATA SOURCES FUSIONFOR ADVERSARY MODELLING, PATTERN MATCHING, AND MACHINE LEARNING TECHNIQUES TO DETECT AND IDENTIFY INDICATIONS OF CRBNE THREAT.

STARTED IN FEB 2020

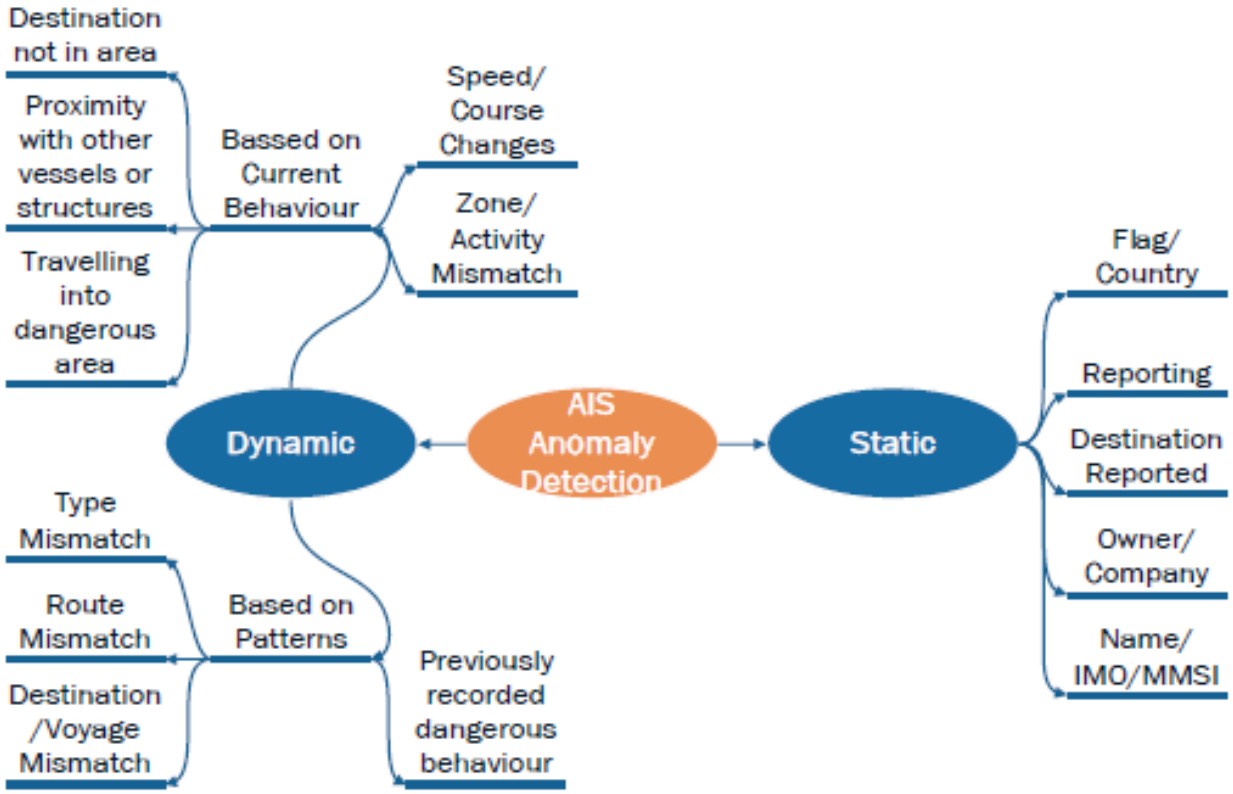
AI & BIG DATA PROJECTS

BIG DATA OCEAN

PROCESSING PATTERNS FOR MARITIME SECURITY AND ANOMALY DETECTION BASED ON AIS DATA (170 TB+)

COMPLETED IN 2017

BİGDATAOCEAN.EU



NATO & BIG DATA

FIRST BIG DATA WORKSHOP WAS HELD IN 2018 BY NATO STO CRME **(SUPPORTED BY DATACRON)**

https://www.cmre.nato.int/maritime-big-data-workshop-home

- Big Data solutions for Maritime Intelligent Surveillance and Reconnaissance
- Advanced Data Fusion and Semantic-driven Integration of Maritime Big Data
- Standards and Exchange Data Models In Maritime
- Reliable Early-warning for Maritime Situation Awareness
- Maritime ICT and Cyber Security
- Autonomous navigation, MSA and AI
- Enhanced Visual Analytics for Maritime Big data
- Human factors in Maritime Big Data

Thank You

Technology
SCIENCE
Threat
VULNERABILITY
Data
SECURITY
RISK
Benefit
CLOUD
ANALYTICS
Cyber
CROWDSOURCING
NETWORK
POLICY
Drivers
Biosurveillance
Terrorism
Statistics
BIOLOGY
Intent
RESEARCH
DATABASES
DIFFUSION
PRIVACY
Storage
USERS
Accident
Biosecurity
Access
Protection
Capability
TRUST
Agent
INNOVATION
Laboratory
Genomics
Management
Domain
PREVENTION
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PRIVATE
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Rights
Transfer
DNA
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Software
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