Devesh Upadhyay

Chief Technology Officer

Dr. Devesh Upadhyay serves as the Chief Technology Officer for Saab, Inc., a wholly owned US subsidiary of the leading Swedish defense and security company with an enduring mission, to help nations keep their people and society safe. As part of this role, he is responsible for the development of the overall Saab Inc. Technology strategy and for the implementation of the company's "future capabilities" strategy specifically focused on the introduction of Artificial Intelligence (AI), Machine Learning (ML) and Autonomous Systems across Saabs product portfolio. Devesh also serves as the CTO of Skapa by Saab, which was founded in 2024 to help create novel solutions to the end user's most challenging problems. Skapa is Swedish for "To create, To Make, To Shape" and leverages emerging disruptive technologies and a small, diverse team that iterates in the operational environment alongside end-users to create new capabilities fast. Saab's innovation and product creation portfolio includes multi-domain (air, land, sea, underwater) systems. Autonomy, Sensing and ISR, Communications, and Simulations play a big role in all Saab products.

Prior to joining Saab, Inc., Devesh founded and established the Core AI-ML-QC team In Ford Research Labs (Sci-Lab) where he served as the Senior Technical Leader for progressing AI/ML and Quantum Computing related foundational research and product development in the areas of Science, Engineering, Energy, Environment, Autonomy and Manufacturing (SE^{3}AM). While leading this effort Devesh led the development of several industry-first solutions such as ML enabled Accelerated Material Discovery, Physics Informed Neural Networks, Reinforcement Learning for Factory process automation, etc. The team also supported solutions such as Ford's Data Analytics platform for Factory Quality Management, Connected Vehicle solutions, Autonomy solutions, System and Safety implications for AI enabled systems, and more. In the QC domain the team took a calibrated approach by watching the evolution of the state-of-the-art while developing "now-near" capabilities such as Quantum Inspired Optimization (QIO) for solving large combinatorial problems.

Devesh serves on several committees and advisory boards. He is currently an active US member of the ISO committee on AI for Road vehicles as well as several SAE–AI committees. In the past Devesh has produced automotive guidelines through USCAR. Devesh continues to serve with IEEE, ASME and SAE in various capacities and is an active reviewer for many journals and top-tier conferences. Devesh is well published and a serial inventor and remains passionate about active research, university interactions, cross domain technology integration and mentoring.

Rapidly evolving Autonomy and AI solutions for the Maritime domain.

Devesh Upadhyay
CTO Saab Inc

In the last decade Engineering has been significantly impacted by a rapid sequence of disruptive technologies starting from high-speed Connectivity, Big-Data, AI/ML and efficient and large Compute. Machine Learning and Data-Driven methods and tools have created a paradigm shift in the way science and engineering are practiced (and taught). The traditional "Engineering" industries such as Aerospace, Automotive, Chemical, Manufacturing, etc., have all been grappling with this change as can be seen by the race, by these industries, to "become software defined". The Maritime industry has, however, largely remained undisrupted, until recently. Shifting interests in novel maritime vessels and the pressures from the so-called Davidson window have revived interests, with urgency, in reviving maritime capacity and capability, especially for the US. Navy and the US Coast Guard. The recently announced OBBA budget promised to allocate around $30Bn toward the US Maritime Industrial Base. Similar efforts are also being observed within the NATO countries.
While Saab produces defense products across all domains it has historically been very strong in maritime solutions. Saab recently announced the A26 5th generation submarine with advanced maneuverability, stealth, and intelligence, surveillance and reconnaissance (ISR) capabilities. The Saab CB-90 uses the Autonomous Ocean Core, a ready-to-use autonomous control system to provide autonomy capabilities to surface and subsurface naval platforms in military and civilian missions. In the underwater domain the Saab MK39 Expendable Mobile Anti-Submarine Warfare (ASW) Training Target (EMATT) support US Navy training programs.

In this talk I will touch upon several aspects of the exciting new directions being observed within the Maritime Industry. I will provide a brief overview of the US Govt's projected Maritime needs. I will discuss major advancements being observed in Maritime Autonomy and some results from ongoing projects within Saab. Next, I will pivot to discuss Saab's Actionable Situational Awareness Platform (ASAP) with emphasis on Maritime Domain Awareness. I will show how this data analytics and intelligence platform naturally extends the agentic AI framework to cross the Cyber-Physical boundary under threat metrics. Finally, I will close the loop by discussing how one might develop AI enabled Responsible and Ethical autonomy solutions for defense applications.