

ANIL KUMAR KORUPOJU

Applied AI Engineer | Enterprise AI Architect

Generative AI • Agentic AI • Enterprise Knowledge Systems • Retrieval-Augmented Generation (RAG) • Industrial AI • Maritime AI • Safety-Critical AI

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[Portfolio](#) | [LinkedIn](#) | [GitHub](#) | [Google Scholar](#) | [Hugging Face](#) | [ResearchGate](#)

EXECUTIVE SUMMARY

Applied AI & Industrial Intelligence Specialist with 14+ years of experience delivering engineering, digital transformation, and AI solutions for safety-critical industries. As a Senior Surveyor (R&D) at the Indian Register of Shipping, I combine expertise in international regulations, engineering systems, and enterprise AI to solve complex operational and knowledge-management challenges.

I have designed and implemented AI solutions ranging from Retrieval-Augmented Generation (RAG) platforms and intelligent assistants to self-supervised anomaly detection and AI-enabled engineering workflows, helping translate complex engineering, operational, and regulatory requirements into practical, scalable solutions.

My work bridges engineering, business, and AI, enabling organizations to adopt trustworthy AI systems that improve decision-making, operational efficiency, and compliance.

CORE COMPETENCIES

- Enterprise AI Solution Architecture • AI Product Engineering • AI Consulting • Digital Transformation • Generative AI • Agentic AI • LLMs • RAG • Knowledge Systems • Enterprise Data Architecture • Stakeholder Management • AI Governance • Responsible AI • Safety Critical Systems
- Python • PyTorch • TensorFlow • Transformers • LangChain • FAISS • HNSW • Hugging Face • Docker • GCP • Fuzzy Logic

SELECTED APPLIED AI PROJECTS

LLM-Based Intelligent PDF Question Answering System (ChatPDF) | [Portfolio](#) | [GitHub](#)

- Developed a production-oriented RAG platform for enterprise knowledge management and technical decision support. Implemented semantic embeddings, vector indexing, cross-encoder reranking, citation-grounded responses, and scalable retrieval workflows to improve trustworthiness and contextual relevance for engineering knowledge retrieval.

AI-Powered Debugging System (StackFix) | [Portfolio](#) | [GitHub](#)

- Designed and implemented an agentic AI platform employing multiple specialized AI agents for query refinement, confidence estimation, adaptive routing, semantic retrieval, and LLM-based reasoning. Integrated vector search, reranking, and selective web augmentation to improve response accuracy across a large technical knowledge base.

NAVISIGHT – Self-Supervised Maritime Anomaly Detection Framework | [Portfolio](#) | [GitHub](#)

- Developed a self-supervised enterprise AI platform for maritime operational intelligence using transformer-based multimodal representation learning for vessel behaviour modelling, anomaly detection, and autonomous decision support. Engineered dual-channel anomaly detection and behavioural embedding retrieval frameworks achieving AUROC up to 0.93 across multiple anomaly scenarios.

Deep Learning Ship Collision Risk Assessment | [Portfolio](#) | [GitHub](#)

- Developed an AI-based collision risk prediction and navigational decision support framework using AIS and environmental weather datasets. Applied SAINT Transformer architecture and engineered pipelines integrating geospatial weather and ship kinematics data, outperforming conventional ML baselines.

PROFESSIONAL EXPERIENCE

Indian Register of Shipping (IRS) | Mumbai, India | Sep 2012 – Present

Senior Surveyor (R&D) — Applied AI & Digital Transformation | Apr 2024 – Present

Senior technical contributor within the Research & Development function, combining classification expertise, international standards development, and AI-enabled engineering innovation across safety-critical maritime systems.

- Lead AI solution architecture initiatives supporting engineering digitalization, enterprise knowledge systems, and intelligent decision support across safety-critical maritime operations.

- Designed production-oriented AI software pipelines from data ingestion through model deployment, integrating engineering workflows with modern AI frameworks.
- Translate engineering and regulatory workflows into practical AI solutions, including intelligent document processing, enterprise knowledge systems, and decision-support tools.
- Contribute to international maritime regulations while evaluating opportunities for AI adoption across engineering and compliance processes.
- Develop AI-assisted document transformation workflows using BERT, BART, and T5 architectures to automate conversion of technical reports into compliant engineering documentation.
- Partner with engineering, software, operations, and senior stakeholders to architect AI-enabled solutions aligned with business objectives, regulatory requirements, and operational constraints.
- Developed a MATLAB-based spectral fatigue analysis tool enabling automated spectral fatigue assessment workflows for complex ship structural evaluations.
- Contributed to IACS CSR fatigue assessment methodologies using Effective Notch Stress analysis and detailed 3D cruciform joint modelling integrated within global ship structural models.
- Authored IMO submissions contributing to the adoption of the IMO *Code on Alerts and Indicators, 2025*. Served as Project Manager for the IACS Safety Panel Project Team.
- Mentored the IMU I-ESKIMO 2024 runner-up team on maritime regulatory topics.

Geosol Associates | Hyderabad, India | Jul 2008 – Jan 2010

Design Engineer — Conducted structural design of reinforced earth retaining wall systems.

INTERNATIONAL CONTRIBUTIONS

- Contributor, IMO Resolution A.1204(34): Code on Alerts and Indicators, 2025.
- Member, ISSC 2028 Committee V.7: Structural Assessment During Operations.
- Contributor, IACS CSR fatigue assessment development and IRS Guidelines (OCCS/WASP).
- Participant, International MARIN WiSP3 project.

SELECTED PUBLICATIONS & THOUGHT LEADERSHIP

Industry Publications

- Most Maritime AI Failures Will Be Data Failures, Not Algorithmic. [Splash247 \(2026\)](#)
- Why AI in Maritime Safety Requires Class Discipline. [Cyprus Shipping News \(2026\)](#)
- Why Data Quality Will Make or Break Maritime AI. [SeaNews \(2026\)](#)

Research Publications

- NAVISIGHT: A Self-Supervised Maritime Anomaly Detection Framework for AIS Trajectories. *Ocean Engineering* (Submitted, 2026)
- Ship Collision Risk Evaluation using AIS & Weather Data. *Ocean Engineering* (2024).
- Effective Notch Stress at Weld Root and Toe. *J. Mar. Sci. Appl.* (2023).
- Review of AI & ML Applications in Marine Sector. *J. Inst. Mar. Eng.* (2024).
- Prediction of ENS in Welded Cruciform Joints Using ML. *Springer ICSOT* (2025).

AWARDS & RECOGNITION

- Outstanding Individual Performance Award — IRS (2023)
- Outstanding Team Award — IRS (2021)
- 2nd Best Paper Award — GLOMARS 2024
- Reviewer Recognition — Transportation Research Part C: Emerging Technologies
- Letter of Appreciation — IMU I-ESKIMO 2024 Mentorship

EDUCATION

IIT Kharagpur — M. Tech, Structural Engineering (2012)

JNTU Hyderabad — B. Tech, Civil Engineering (2008)

CERTIFICATIONS

IBM AI Engineering | IBM Generative AI with LLMs | Google Advanced Data Analytics | Advanced ML on Google Cloud | GCP ML Engineer (Prep) | ISO 9001 & ISO 27001 Lead Auditor