

NITK Surathkal launches AI platform NOMAD

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Mangaluru: The National Institute of Technology Karnataka (NITK), Surathkal, launched NOMAD (Node for Open-source Mobile AI Deployment), a fully operational AI research platform designed for deployment in field conditions. NOMAD is built to function in remote, resource-constrained and disaster-affected environments where conventional cloud infrastructure is unreliable or unavailable.

As AI systems increasingly depend on centralised data centres, real-world environments, disaster zones, coastal regions and field research sites, face persistent challenges in connectivity, power, and infrastructure. NOMAD addresses this gap by enabling reliable, on-site AI computing at the edge, supporting real-time data processing and decision-making in conditions where infrastructure cannot be guaranteed.

Housed within a repurposed shipping container at NITK's beachfront SEARCH research station, NOMAD operates as a self-sufficient system. Power is ensured through four independent sources: grid supply, rooftop solar, a towable 15kW solar-battery unit and



HIGH-TECH: NOMAD is built to function in remote, resource-constrained and disaster-affected environments

a diesel generator with UPS backup. Connectivity is secured through triple redundancy, integrating institutional fibre, broadband and a wireless bridge.

The compute stack combines open-source clusters and edge devices with high-capacity storage, while institutional HPC resources are being integrated into the facility. The workspace supports both advanced research and teaching, with immersive learning capabilities.

NOMAD is co-located within the NITK SEARCH complex along the Arabian Sea coast, enabling continuous, on-site field work with living quarters. Conceived by Dr Pruthviraj U, associate professor from the department of water resources and ocean engineering, NOMAD's current focus includes edge AI architecture, AI-driven water systems and coastal disaster intelligence, particularly enab-

ling local data processing during events such as landslides and flooding, where timely insights are critical but connectivity is unreliable. The initiative is supported and actively mentored by NITK alumnus Padmanand Warriar (Electrical and Electronics Engineering, 1981 batch), a technology leader with a distinguished track record in large-scale systems and innovation. NITK plans to expand NOMAD through interdisciplinary projects and integration into academic programmes.

"The next frontier in AI is pushing innovation at the edge," said Padmanand Warriar. "In coastal disasters such as landslides, the infrastructure we depend on is often the first to fail. NOMAD demonstrates that advanced AI can continue to function in those conditions, bringing compute closer to where time-sensitive decisions must be made," he said.