

NEWSLETTER



NEARDATA Project: Collaborative Innovation with TU Dresden

By K.P.N Jayasena (TUD)

The NEARDATA project, an EU-funded initiative, is developing an Extreme Near-Data Platform to streamline the consumption, mining, and processing of distributed and federated data. By eliminating the complexities of accessing data across multiple locations, NEARDATA introduces next-generation near-data processing capabilities in Cloud and Edge environments. The platform integrates Extreme Data, metadata, and secure data connectors to enhance operations like data discovery, mining, and filtering from diverse data sources.

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At TU Dresden's Chair of System Engineering group, NEARDATA is making significant advancements in secure data processing, federated learning (FL), and confidential computing. As the project enters its final phase, the team is tackling critical challenges related to privacy, scalability, and security. A major milestone is the enhancement of Secure Federated Learning (FL) through the integration of SCONE and Trusted Execution Environments (TEEs). This ensures data confidentiality, integrity, and execution consistency while preventing unauthorized access or manipulation. The team is currently evaluating this framework using real-world medical datasets.

Another key achievement is the launch of the NEARDATA Data Broker, designed with secure enclave-based architecture for safe data sharing in untrusted environments. Remote attestation mechanisms ensure that only validated TEEs can process sensitive data, enhancing security and trust in distributed environments.

In collaboration with DELL, the team has integrated Pravega with SCONE, enabling secure, low-latency data streaming for federated datasets. This integration supports high-throughput pipelines with end-to-end encryption, real-time integrity verification, and access control mechanisms, optimizing cloud-edge performance for federated learning and confidential analytics applications.

As the project enters its final year, NEARDATA is focused on disseminating research through leading conferences and collaborating with DELL and NCT on secure multimedia streaming. The project is also promoting the enterprise adoption of SCONE through SCONTAIN and working with policymakers to advance privacy-preserving frameworks and zero-trust architectures.



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With these efforts, the NEARDATA team is shaping the future of secure, scalable, and privacy-preserving data processing technologies. As the project nears completion, the team welcomes collaboration with academia and industry to tackle challenges in secure AI, confidential computing, and federated learning. Stay tuned for more updates from TU Dresden's NEARDATA team!

 <https://neardata.eu/>

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 <https://github.com/neardata-eu>

