University of Messina, Italy
Department of Mathematical and Computer Sciences,
Physical Sciences and Earth Sciences

Subject: Internship Proposal

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Project Supervisor

Surname	Fazio
Name	Maria
Department	MIFT
Laboratory	FCRlab
E-mail	mfazio@unime.it
Phone number	

Project Co-Supervisor

Surname	De Novi
Name	Danny
Job Position	
Department	MIFT

Laboratory	FCRlab
E-mail	danny.denovi@unime.it
Phone number	

Project details

Title	Empowering Trustness in AI via Blockchain Technologies

Detailed description: The student will be involved in the design, implementation, and validation of innovative methodologies for certifying artificial intelligence pipelines using blockchain technology, with a specific focus on ensuring the traceability, integrity, and verifiability of machine learning training processes.
The activities will concern the development of an end-to-end training and validation pipeline capable of generating and recording cryptographic evidence (hashes, checksums, training and validation metadata) on public or permissioned blockchains (e.g., Ethereum, Polygon, Circular Protocol) to guarantee transparency and certification of the model lifecycle.
The student will integrate machine learning and deep learning techniques (PyTorch, TensorFlow) with distributed notarization modules implemented via smart contracts or blockchain APIs, and will experiment with methods for the certification of datasets, models, and results using zero-knowledge proofs and decentralized storage systems (MinIO, IPFS).
The proposed methodology must be validated through standard performance metrics (e.g., accuracy, F1-score, RMSE) and blockchain consistency indicators (e.g., confirmation time, gas cost, record immutability), comparing the results with equivalent non-certified pipelines.

Duration (month – max 12)	12
Duration (hours)	60
Open positions	2

Internship Skills

Technical requirements: Good knowledge of computer networks and AI models.	
Other skills	