ETSI Ongoing Work on Standardizable Metrics for Test & Certification of AI/ML Models for ANs

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Standardizable **Metrics** for Test & Certification of AI/ML Models for ANs

❑ **ETSI TC INT & TC MTS are working on this Topic:**

    ❑ **ETSI TR 103 749** on **Testing of AI with definition of Quality Metrics**: Testing AI Models, components, systems, **Metrics for Measurements and Assessments in Testing and Certification**

    ❑ **ETSI TR 103 748** on Artificial Intelligence (AI) in Test Systems and Testing of AI Models; **Use and Benefits of AI Technologies in Testing**

❑ **Relationship to the Important Topic for CSPs: Trust and Confidence Building in ANs**

    ❑ **ETSI TR 103 629** is work in progress on **Confidence in autonomic functions; Guidelines for design and testability**

Quality Metrics for AI-enabled Systems

Characterizing trustworthiness of AI in a technical sense at different levels of integration

- ⩔ AI and Machine Learning (ML) models

- ⩔ AI in system context

	Actually Positive	Actually Negative
Predicted Positive	True Positive	False Positive
Predicted Negative	False Negative	True Negative

Confusion matrix for metrics addressing ML models

Metrics measuring quality characteristics of AI models

- ⩔ Probabilistic accuracy under uncertainty

- ⩔ Robustness against noisy, erroneous, or (constructed) adversarial data

- ⩔ Others: reliability, fairness, security, explainability

Metrics as Basis for Test and Certification

Quality metrics sought for measuring the quality of AI in system context

Metrics for AI models need to be complemented to

- Capture the quality attributes of autonomic systems
- Create a basis for certification

Challenge: Establish metrics through testing under uncertainties

Examples of quality attributes in system context

- Stability of the AI model

- Speed of learning of the AI model

- Speed of a decision-making cycle of the AI model after receiving a triggering input

- Speed of convergence of multiple interacting AI components in a larger AI system setup

Standardizable Metrics for Test & Certification of AI/ML Models for ANs: Metrics as Basis for Test and Certification

ETSI TC INT and MTS are the home for testing AI models and AI systems, in alignment with the European Commission (EC)

Work of INT & MTS contributes to Testing AI systems and Trust and Confidence Building in Autonomic/Autonomous Networks (ANs)

- Architecture for Autonomic Test System (ATS) in **ETSI TR 103 748**

- Definition of Standardizable Metrics for ANs and other classes of AI systems that build the foundation for their certification (**ETSI TR 103 749**)

- Building an Ecosystem for Certification Labs for AI models and AI systems

Come and JOIN us (Joint INT & MTS Work)

Thank you