AI-network: Data and Agent Aware Inference and Training Network (DA-ITN)

IETF 124

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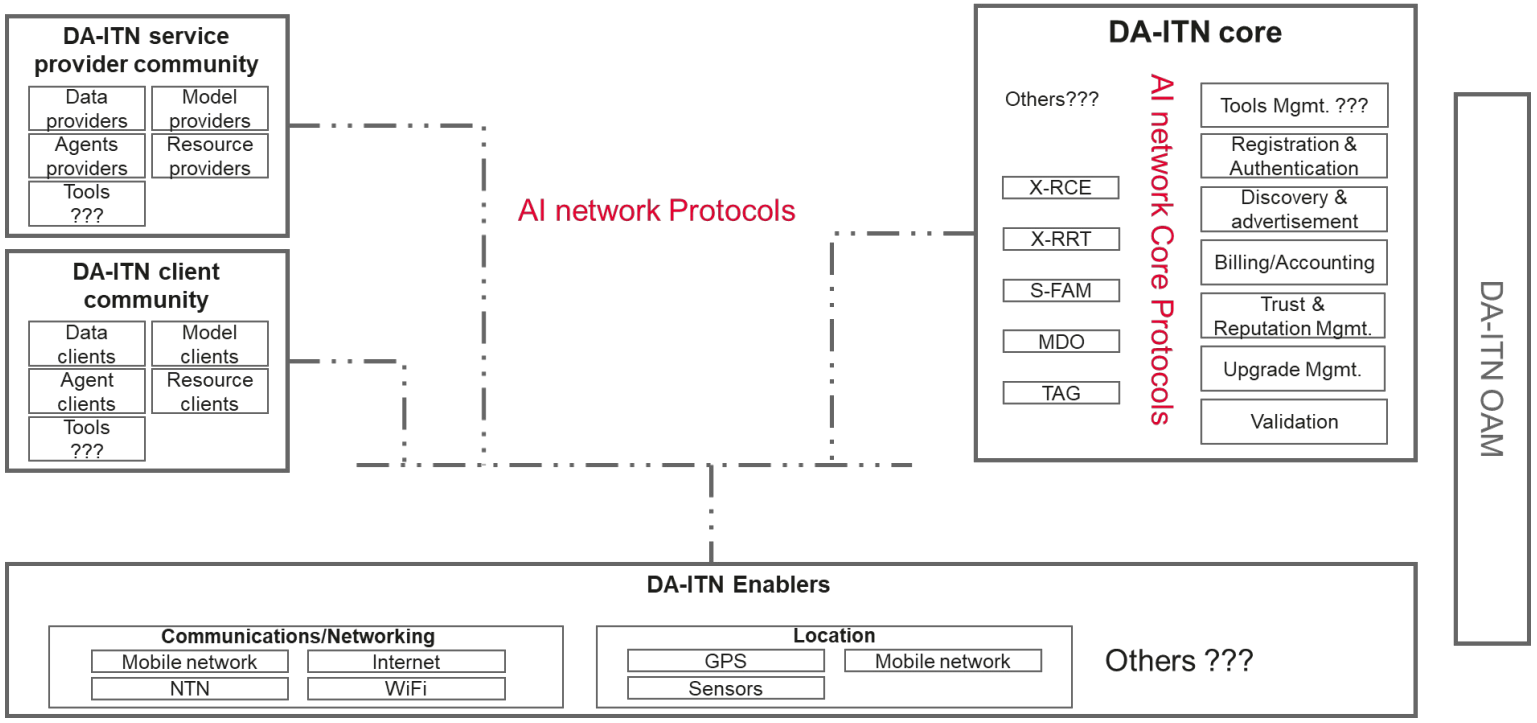
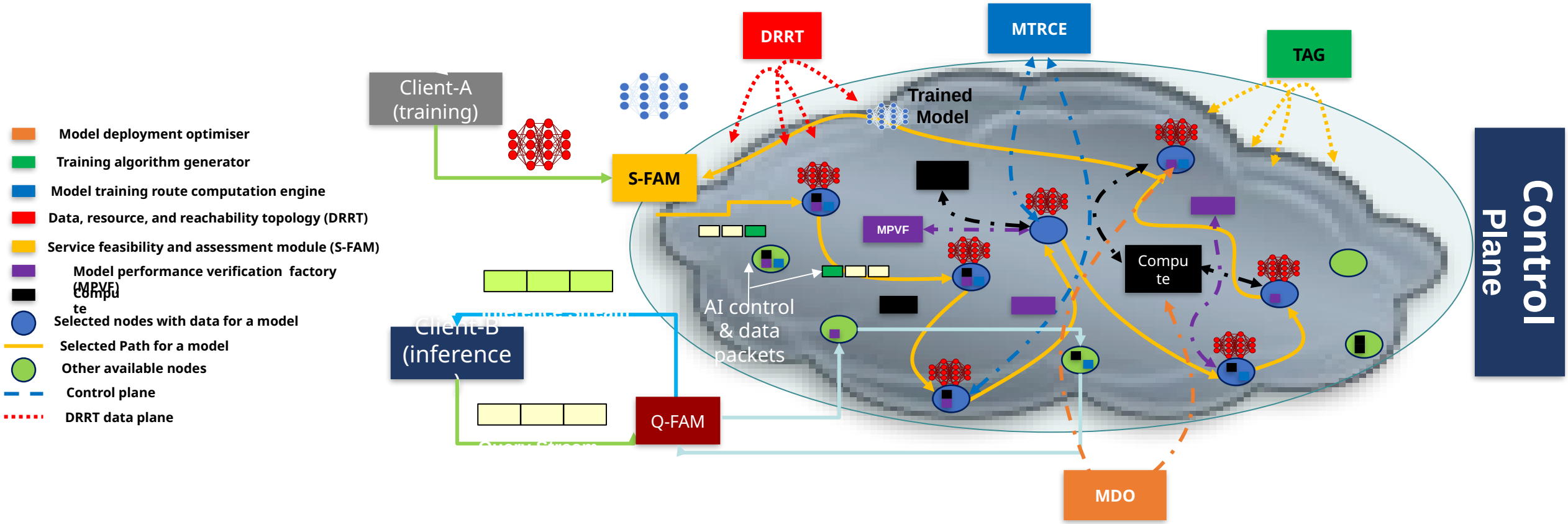
What problems are we working on?

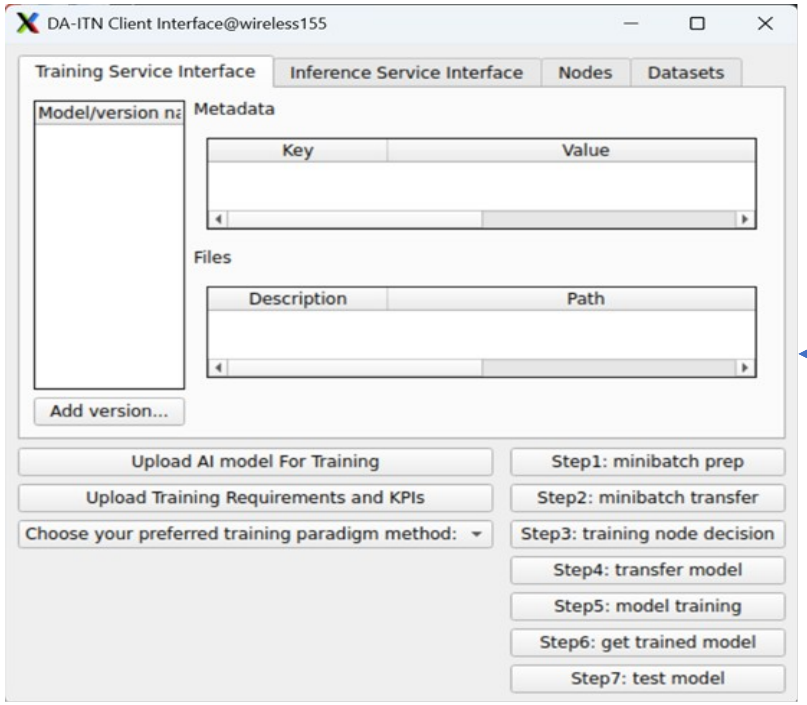
- Build AI Network
  - A network designed to facilitate AI services including training, inference, and agentic operation
  - It connects different AI players, creating a new ecosystem and economy
- Composed of:
  - Control plane, data plane, OAM, and intelligence layer

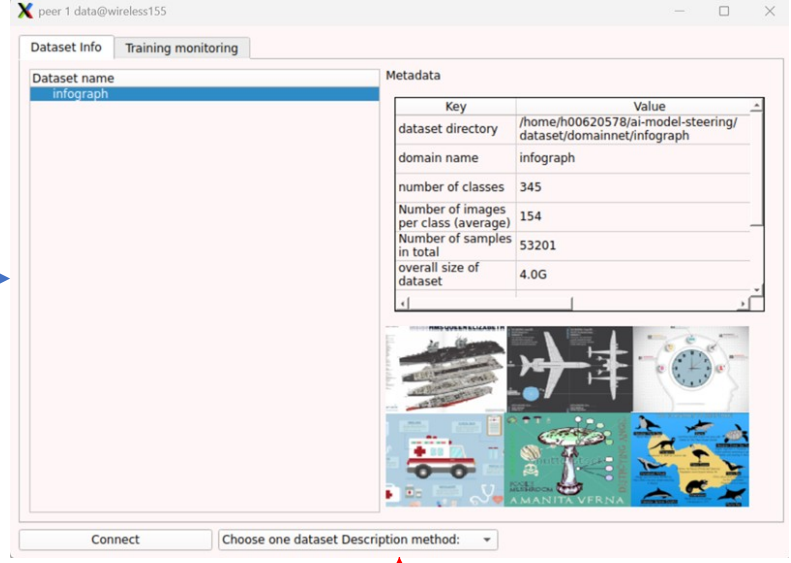


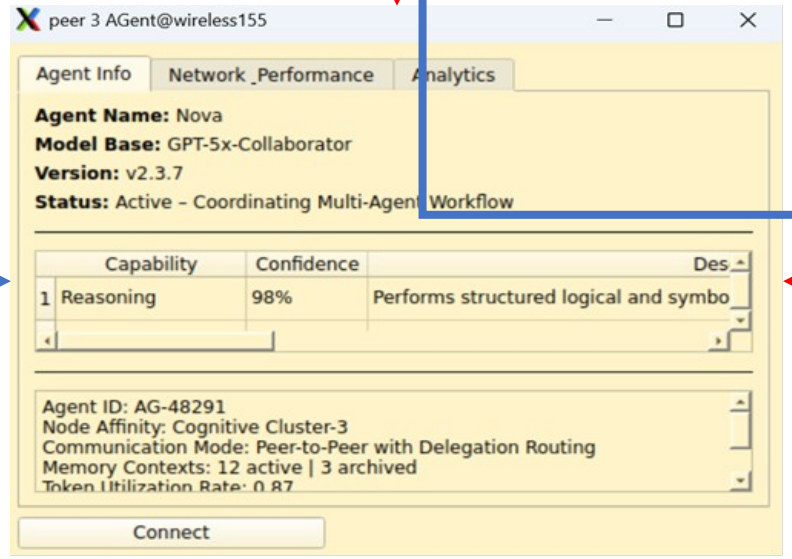
AI Network: High Level View

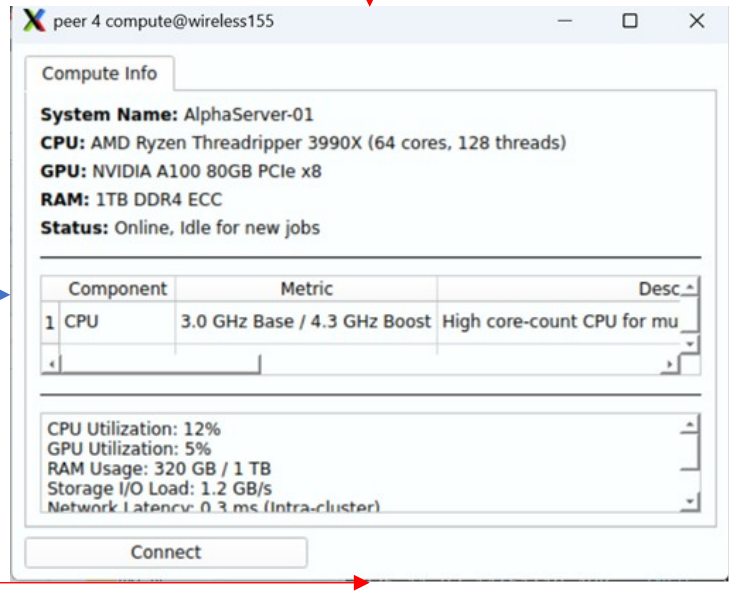


Platform built









Sample Problem: toy example

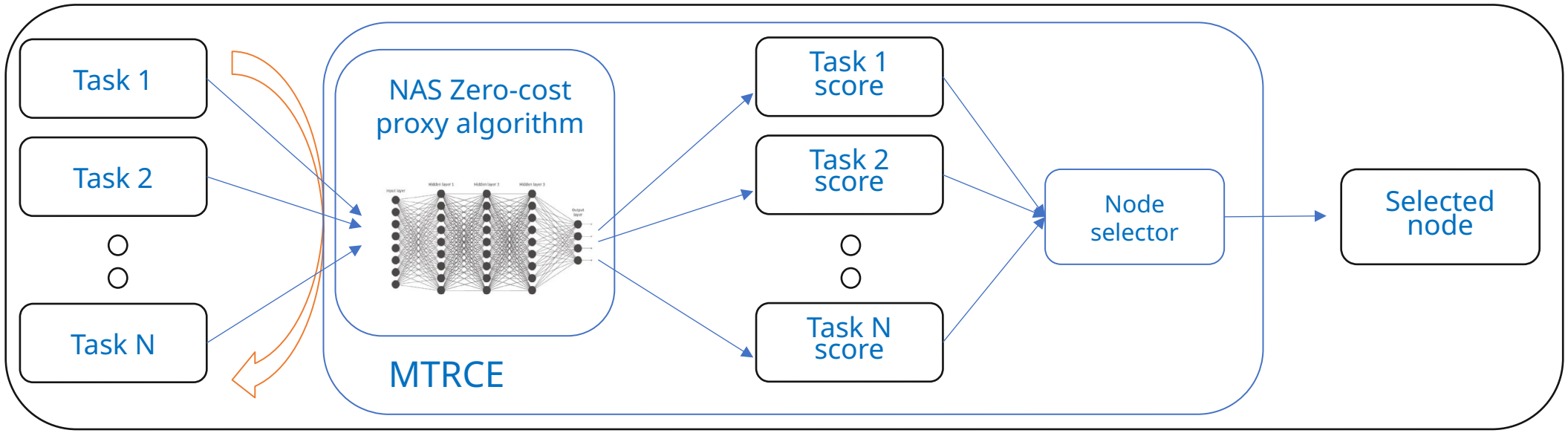
Distributed training

- Problem setup:
  - Consider a network that is made up of a large number of connected nodes where each node holds a different training dataset
  - A client wants to train its model on the data present in this network
- **Challenge**: How to select the best subset of the datasets suitable for training this AI model, such that
  - a pre-specified set of training requirements and KPIs could be met while preserving privacy, maintaining distribution, and being efficient

MTRCE Algorithm: NWOT

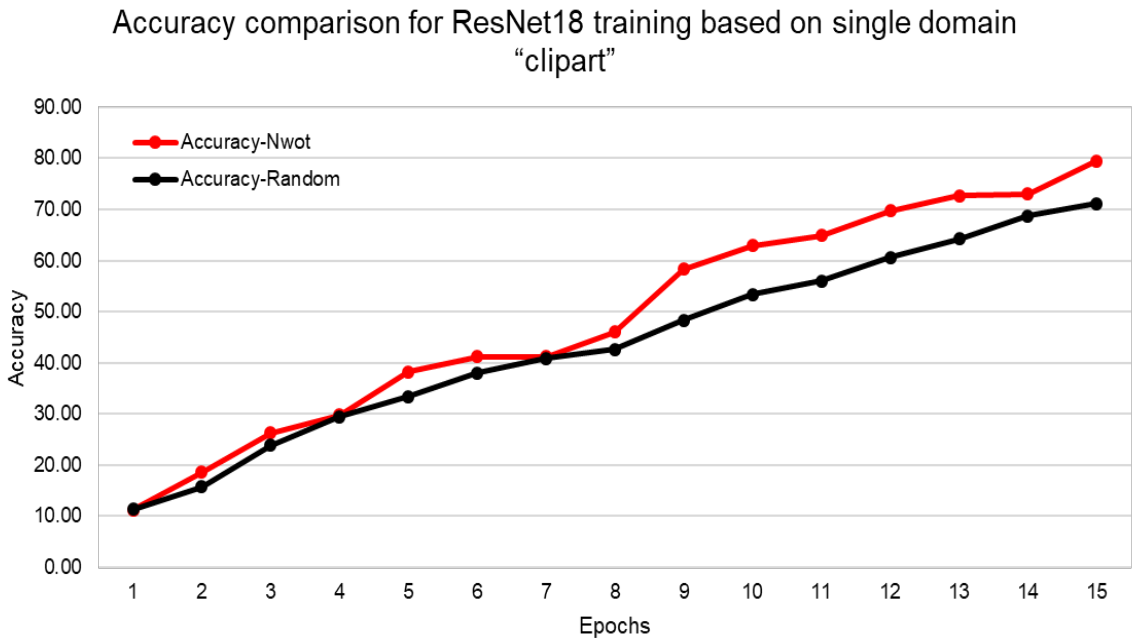
Devised solution

- In this method, a minibatch of data is collected from each dataset in the distributed network and is used to compute a score

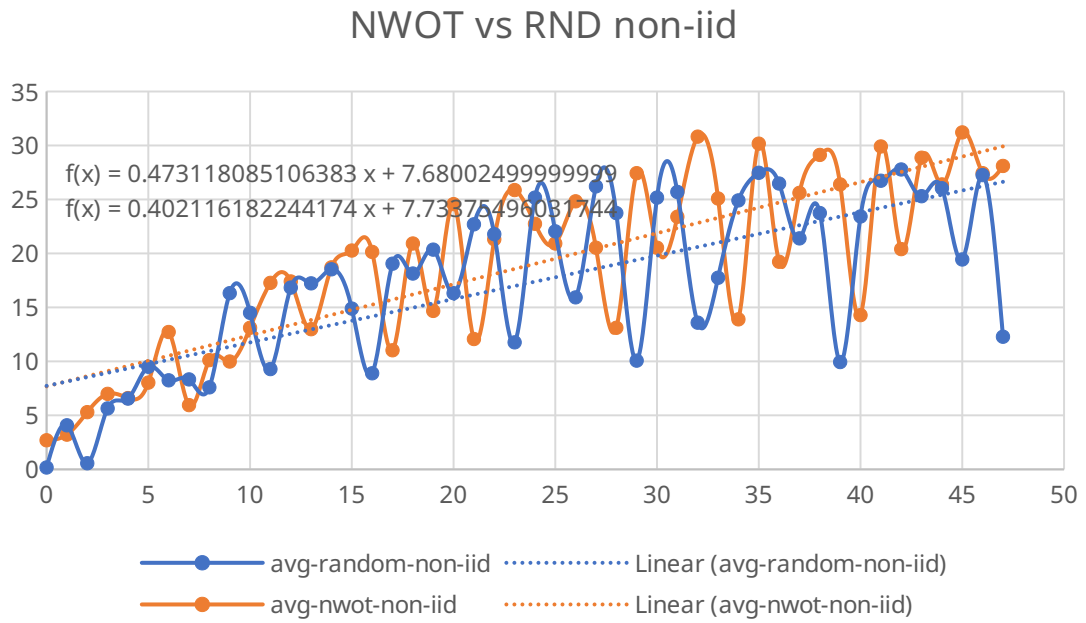


NAS inspired

Sample results: NWOT



Full-IID experiment



Full-Non-IID experiment

Path Forward

Engineering tasks

- Develop appropriate communication protocols between different components to meet unique requirements
- Support interoperability with other agentic protocols such as A2A, MCP, and ANP
- Consider security and privacy aspects
- Add new services to the platform

Research Tasks:

- Dataset Descriptors
- Intelligence layer algorithms
- KPI considerations in decision making processes

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