16/3/2020

Technology Workshop Meeting Notes “Machine Learning in communication networks”

* scribe: Vishnu

.>recording is ON.

.>Ray requested everyone to register.

.>Ray introduced the workshop.

.>stressed on the roadmap for collaboration.

.>agenda is introduced.

.>Ray presented the intro to ENI.

 . Haining introduced the intent based policy translation and implementation.

>Shengming presented “PoC #1: intelligence network slicing life cycle management”

Question-1: what is the accuracy which you observed for the traffic prediction?

>>92% accurate

Question-2: what is the backend of the slice creation/adjustment? Is it real network function? Virtual or physical?

>>Huawei NCE, Huawei controller.

>Scott presented SAI

. Q> Q1) Is it within SAI scope to specifically address threats or attacks related to AI in 5G or future network? Example: some of the data sources may be "trusted" within an operator's network.

>> Scott explained about poison data: is possible. Genuine attacks are possible, where data is used?

>> Also on attack vector.

>> Nature of problems in the network.

>> frame problem states from those problems.

>> understanding how data is used in RAN, customer opt, migration strat, policies?

>> From there, frame attack prevention.

Q2) are verticals within the scope:

>> Yes, based on data from outside.

>> Attackers can force wrong inference in such use cases.

>> understanding context is important.

>> Some important considerations: how much data is required? >> how much can decision be trusted? if you don’t know the context then attacker may alter the context and the decision is poisoned.

Will asked about inputs from PoC.

>> Scott explained that SAI will take all the PoCs.

>> Intention: valued feedback to everything.

Question: security testing of AI? will it cover detailed mechanism or benchmark?

- Scott explained that the scope includes: how to test AI? expected test results.

- test confidence in the AI? data sources, algorithm sources.

- Scott explained that activity is just starting.

- TTCN approach may not be quite right for AI.

- More work needed to identify what is the best way of doing this.

- More work needed to find right test methods for AI environment. rather than apply the existing methods.

Marco: are there arch linkages? ENI and ISG SAI?

- Scott explained that SAI will work closely with ENI and ZSM.

- Currently, getting knowledge and coordination sessions.

Slawomir: presented on 5G where we are and what is next?

- Mostafa asked about tactile internet?

 - Slawomir mentioned that there are use cases where tight latency requirements are not required.

 - Mostafa: to achieve energy saving, when we try to shut it down for a while, some configurations make us fail us to shutdown totally

 - How to increase the energy saving: in mixed configurations is still not optimal.

- Marco asked about iRefA

 - Marco pointed to work by standardization orgs (ITU-T, JTC1 etc.) on the architecture building blocks (ABB), that can be considered as possible targets of the iRefA process (versus the iRefA ABB catalog).

- Yue Wang from Samsung.

 - Rough % of power saving.

 - Slawomir referred to MIMO

 - Lot of BB processing is needed.

 - At the moment it is not clear.

 - ML with good models can help to reduce energy consumption.

 - Relatively energy efficient.

 - Robust prediction, optimization.

 - But with consuming a lot of computation.

 - Distribution bandwidth stochastic process is changing.

 - Train/re-training is needed.

 - Then it will consume power.

- Vishnu presented the ITU toolkits.

- Marco: presented Q20/13 updates

- Yu Zeng asked about:

 - How about other types of networks? IoT? BB?

 - gave pointers on https://arxiv.org/abs/1910.03510

 - And about ML5G-I-179-R1

-----------------------------------------------afternoon panel discussions--------------------------------------------

- Luca opened the discussion:

 - Scott: model from ENI: categorization: is a good starting point.

 - Data, process-able: context: levels identified by ENI are good starting point.

 - Common terminology, ontology, is needed

 - Intelligence definition is needed

 - ZSM: includes moving models between entities.

 - Shared intelligence, individual intelligence: definition is needed.

 - Intelligence vs. autonomy: has to be clarified.

 - Marco: commented referring back to Slawomir’s presentation

 on use case definition and steps.

 - Scott: suggested to be not too focussed on architecture.

 - suggested much more time on the role of intelligence

 - and data sharing.

 - Yue Wang: what is the purpose of doing the classification?

 - Luca: commented on category, classification: use cases.

 - about the classification: application of AI in the network,

 traffic management, access network

 - Marco: more work needed on a use case template.

 - Luca: can send it as a LS with annotation.

 - Yue wang: examples are needed? to represent the use of AI.

 - Scott: currently we are trying to bootstrap and expand the knowledge.

 - terminology basis is needed.

 - Marco: is there a start with intent-based networking (is it possible to adapt the outputs according to the objectives of the use cases documentation process)

 - maybe there are other organizations which can provide some input.

 - Luca explained the methods followed by ENI:

 - Use case mapping can be done provided by a classification.

 - but also provided as mapping to architecture.

 - mapping to ENI agent? what functional blocks are used?

 - includes data adaptability.

 - normalized data at the interface.

 - perhaps is possible to generalize the processes.

 - Antonio: explained the ENI approach

 - context is very important for the arch and use cases.

 - Luca: metadata is important for security

 - use of metadata?

 - could be a matter of standardisation.

 - Scott: massive rise in malicious nature of AI

 - attackers will transfer knowledge from domain to domain.

 - open standards will help in countering the attackers.

 - open metadata will help.

 - Scott: data overlap between different planes.

 - aware of the overlap to understand the impacts.

 - Q11: Antonio: ENI interacts with assisted systems.

 - it all begins with negotiation procedure at high level

 - it is envisioned that ENI extracts from the assisted system

 its capabilities and provides its capabilities.

 - then negotiates and decides the mode of cooperation.

 - at first version it is at high level.

 - the 3 most priority systems: NFV MANO, LSO.

- Q12: Luca: is there an expectation of edge intelligence?

- Is there an expectation of differentiated data handling? Yes & No (there is the option that the core does not assist or they can refuse to cooperate).

- Do we have frameworks to “Know and cooperate”? Not Yet

- What is the Priority? It is almost impossible to have a complete list of AI in verticals.

--------------end of notes------------------------------------------------------------------