UNLEASH THE POWER OF LIMITLESS CONNECTIVITY
Operational Transformation

Reducing the cost of network traffic monitoring with AI

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High quality predictions lead to more automated decision making

As predictions get better, the role of human judgment changes and more and more decision making can be automated.
Network monitoring is complex with traditional technologies.

Data is collected from multiple points and stored for long periods of time. Can we reduce the amount collected data and the volume of stored data?
Information can be collected strategically

Flows travers links. Can we use link information to infer flow information?

In one example network the amount of information was reduced by 75% with acceptable loss of flow precision.
Information collection can be reduced with imputation

In one example network the amount of information was reduced by 20% with acceptable loss of flow precision.
DNN architecture for data reconstruction

The network uses interleaving in the frequency domain and the bottleneck which models the missing data as noise to reconstruct the data.
Information storage can be reduced with compression

Raw storage

<table>
<thead>
<tr>
<th>Fragment Index</th>
<th>Period</th>
<th>Pointer</th>
</tr>
</thead>
<tbody>
<tr>
<td>$i$</td>
<td>$t_{\text{min}}, t_{\text{max}}$</td>
<td>File</td>
</tr>
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</table>

Raw information is encoded in a DNN, using memorization

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In one example the cost of storing information in the cloud was reduced by 96% with acceptable loss of flow precision.
### Key Takeaways

1. AI is a prediction technology. Prediction is the process of filling missing information.

2. There are many use cases where filling missing information can reduce network monitoring costs.

3. Information collection can be reduced by collecting link information only.

4. Information collection can be reduced by taking advantage of correlations.

5. Information storage can be reduced with compression.
Thank You!

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