



ITU-ML5G-PS-004: Federated Learning for Spatial Reuse in Multi-BSS Scenario

Team FederationS

CONNECT Centre - Trinity College Dublin, Ireland

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Due to the *distributed channel access* policies combined with the usage of *unlicensed frequency bands*, WiFi system performance tends to degrade in **crowded** scenarios

Your internet connection is unstable

To improve performance the owner of the WiFi network request to collect data*

(*that flows over the network)



Low WiFi Speed!



No Data Collection



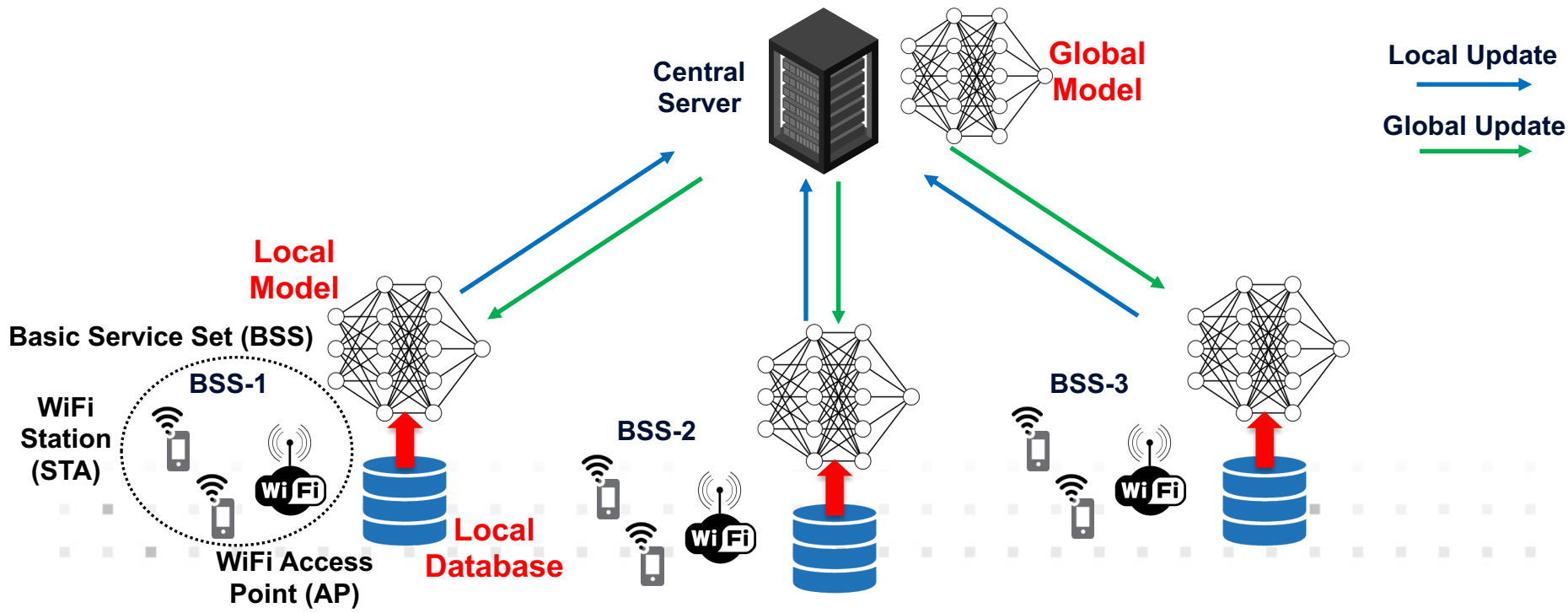
Good WiFi Speed



Data collection



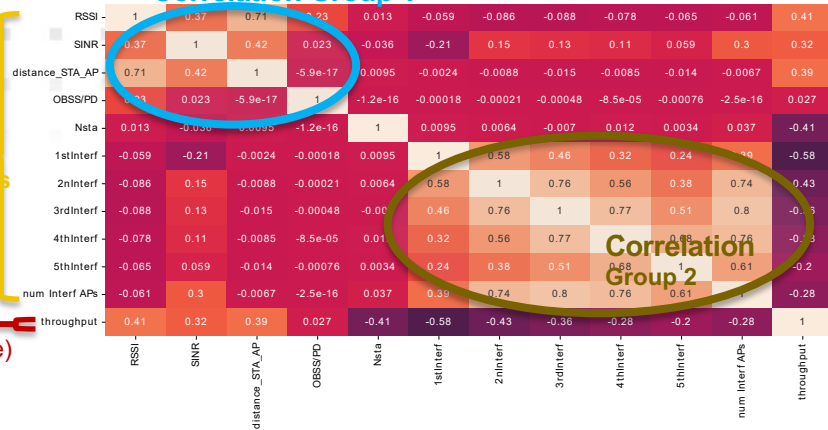
Federated Learning for the Optimal Configuration of the Overlapping BSS-PD Threshold



Correlation Group 1

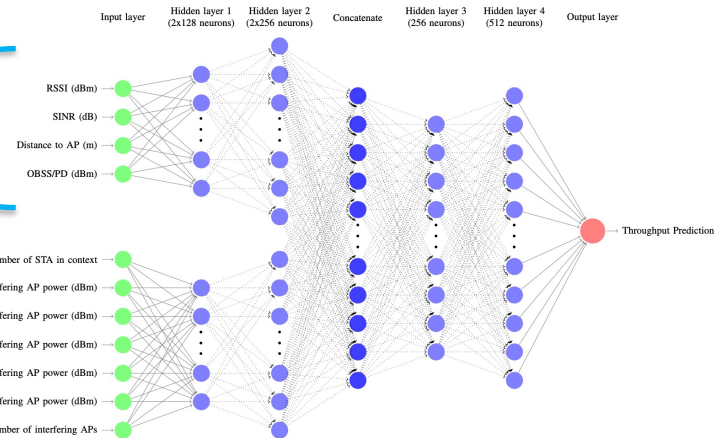
Input
Features

Target
(Output
Variable)



Correlation Group 1

Correlation Group 2



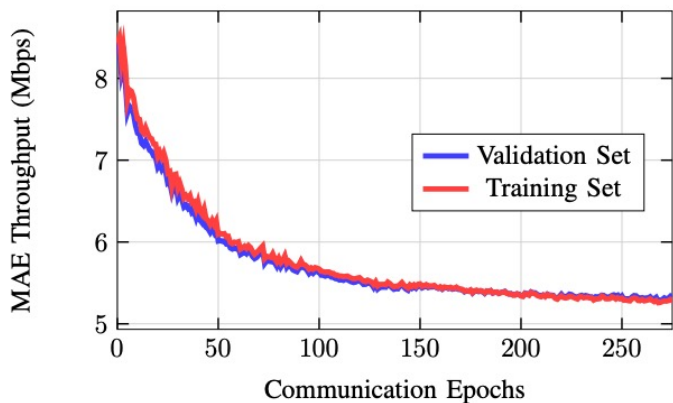
1. DATA ANALYSIS

2. DEEP NEURAL NETWORK DESIGN

3. FEDERATED LEARNING

4. OUR ADVANTAGES

MAE During FL Training



KPIs / Solution

FederationS

Centralized
Learning

Heuristic
Approach

Data-driven



Improved WiFi
data rate



Privacy



High-security



Team FederationS



**Dr. Jernej
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**Thank
you!**



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