**📊 Microsoft Teams CQD Machine Learning & Analytics Presentation**

**Slide 1: Title Slide**

* **Title: Advanced Machine Learning & Analytics on Microsoft Teams Call Quality Data**
* **Subtitle: Anomaly Detection, User & Device Analysis, Feedback Correlation**
* **Presented by: [Your Name]**

**Slide 2: Problem Statement**

* **Predict and detect network and subnet issues by Date & Hour.**
* **Identify problematic users based on media type (Audio, Video, Screen Share).**
* **Analyze user feedback to correlate quality perceptions.**
* **Detect problematic devices contributing to poor call quality.**

**Slide 3: Data Source: Microsoft Teams CQD**

* **CQD Dimensions: Date, Hour, Subnet, Reflexive IP, User, Device, Media Type, etc.**
* **CQD Measures: Avg Jitter, Packet Loss, Round Trip Time, Network MOS, Poor Stream Count.**
* **Additional: Feedback scores (if available).**

**Slide 3A: Intelligent Classifier Dimensions Used**

| **Classifier Dimension** | **Use in ML Models** |
| --- | --- |
| **Network Type** | **Anomaly Detection (Network Quality)** |
| **Second Subnet / Reflexive IP** | **Anomaly Detection (Subnet-wise)** |
| **Media Type** | **User Behavior Clustering / Prediction** |
| **Stream Direction** | **Differentiating send vs receive issues** |
| **Device Make & Model** | **Device Impact Analysis** |
| **Client Version** | **Model version detection / feedback analysis** |
| **User Type** | **Feedback & Quality Variance analysis** |

**Slide 4: Use Case 1: Network & Subnet Anomaly Detection**

* **ML Techniques: Isolation Forest, One-Class SVM, AutoEncoder**
* **Dimensions: Date, Hour, Second Reflexive IP, Second Subnet, Network Type**
* **Measures: Avg Jitter, Packet Loss, Round Trip, MOS**

**Slide 5: Use Case 2: Problematic User Detection (by Media Type)**

* **ML Techniques: XGBoost, KMeans**
* **Dimensions: UPN, Media Type, Client Version, Stream Direction, User Type**
* **Measures: Poor Stream Count, Jitter, Packet Loss, MOS**

**Slide 6: Use Case 3: Feedback Correlation Analysis**

* **ML Techniques: Logistic Regression, BERT**
* **Dimensions: UPN, Feedback, Device, Media Type, Client Version**
* **Measures: MOS, Jitter, Feedback Score**

**Slide 7: Use Case 4: Device Impact Analysis**

* **ML Techniques: XGBoost, Association Rule Mining (Apriori)**
* **Dimensions: Device Model, OS, Client Version, Device Category**
* **Measures: Avg Jitter, RTT, Poor Calls, Failure Rate**

**Slide 8: Technology Stack**

* **Data Ingestion: Azure Data Factory**
* **Processing: PySpark, Pandas**
* **ML Modeling: Scikit-learn, PyOD, Prophet, TensorFlow**
* **Visualization: Power BI, Azure Monitor**
* **Automation: Azure ML Pipelines, Synapse Notebooks**
* **Feature Engineering: One-hot encoding (e.g., Network Type, Client Type)**

**Slide 9: Power BI Dashboard Design Overview**

* **Slicers: Date, Hour, Subnet, Device, Media Type**
* **Cards: Total Calls, Poor Stream %, Avg MOS**
* **Heatmaps: Subnet vs Hour Quality Heatmap**
* **Tables: Top Problematic Devices/Users**
* **Line Charts: Trend of Jitter, Packet Loss**
* **Drillthrough: User Type → Media Type → MOS Score**

**Slide 10: Sample Python Notebooks**

* **Notebook 1: Data Preprocessing (Pandas, PySpark)**
* **Notebook 2: Anomaly Detection (Isolation Forest)**
* **Notebook 3: Clustering Users (KMeans)**
* **Notebook 4: Feedback Sentiment Analysis (BERT/TextBlob)**

**Slide 11: Next Steps**

* **Deploy models in Azure ML**
* **Integrate real-time alerting with Power BI & Power Automate**
* **Continuous model retraining pipeline**

**Slide 12: Thank You!**

* **Questions & Discussion**