CIF Processed Data Description

This document describes the values in the CIF\_Processed\_Data.csv, which was created by running signal\_processor.py to modify the columns in CIF\_Complete\_Dataset.csv.

Pass identification columns

* overflightID – a unique name for a downlink
* windowID – another number used to identify a downlink
  + due to a design flaw, this value is not necessarily unique

MAROS Features

* MAROS\_rise\_elevation – the elevation of the orbiter when it first becomes visible to the lander
* MROS\_max\_elevation – the maximum elevation of the orbiter

TDS Features

* TDS\_outasync\_tf – the number of outasync transfer frames in the pass
  + Not sure how many outasync frames implies that data is missing

Computed Numeric Features

* Data Volume Deltas
  + rover\_to\_orbiter\_delta – the difference in data volume between the rover and the orbiter
    - Orbiter volume – rover volume
  + orbiter\_to\_TDS\_delta – the difference in data volume between the orbiter and the TDS
    - TDS volume – orbiter volume
  + TDS\_to\_GDS\_delta – the difference in data volume between the TDS and the GDS
    - GDS volume – TDS volume
  + Actual\_to\_predict\_delta – the difference in data volume between the GDS and the predicted data volume of the downlink
    - GDS volume – predicted volume
* Time Deltas
  + TDS\_GDS\_start\_timedelta – the time difference between the TDS start time and the GDS start time
  + TDS\_GDS\_end\_timedelta – the time difference between the TDS end time and the GDS end time
  + Actual\_to\_predict\_start\_timedelta – the time difference between the GDS start time and the predicted start time
  + Actual\_to\_predict\_end\_timedelta – the time difference between the GDS end time and the predicted end time

Vectorized Features

* Orbiter columns
  + The orbiter that sent the downlink
  + There are 6 unique orbiters used during the history of the mission
    - MRO, ODY, MEX, MVN, TGO are satellites
    - DTE stands for “Direct to Earth” and does not send data via satellite
* TDS\_DSS columns
  + The DSN Station that received the downlink
  + There are 17 unique stations used during the history of the mission