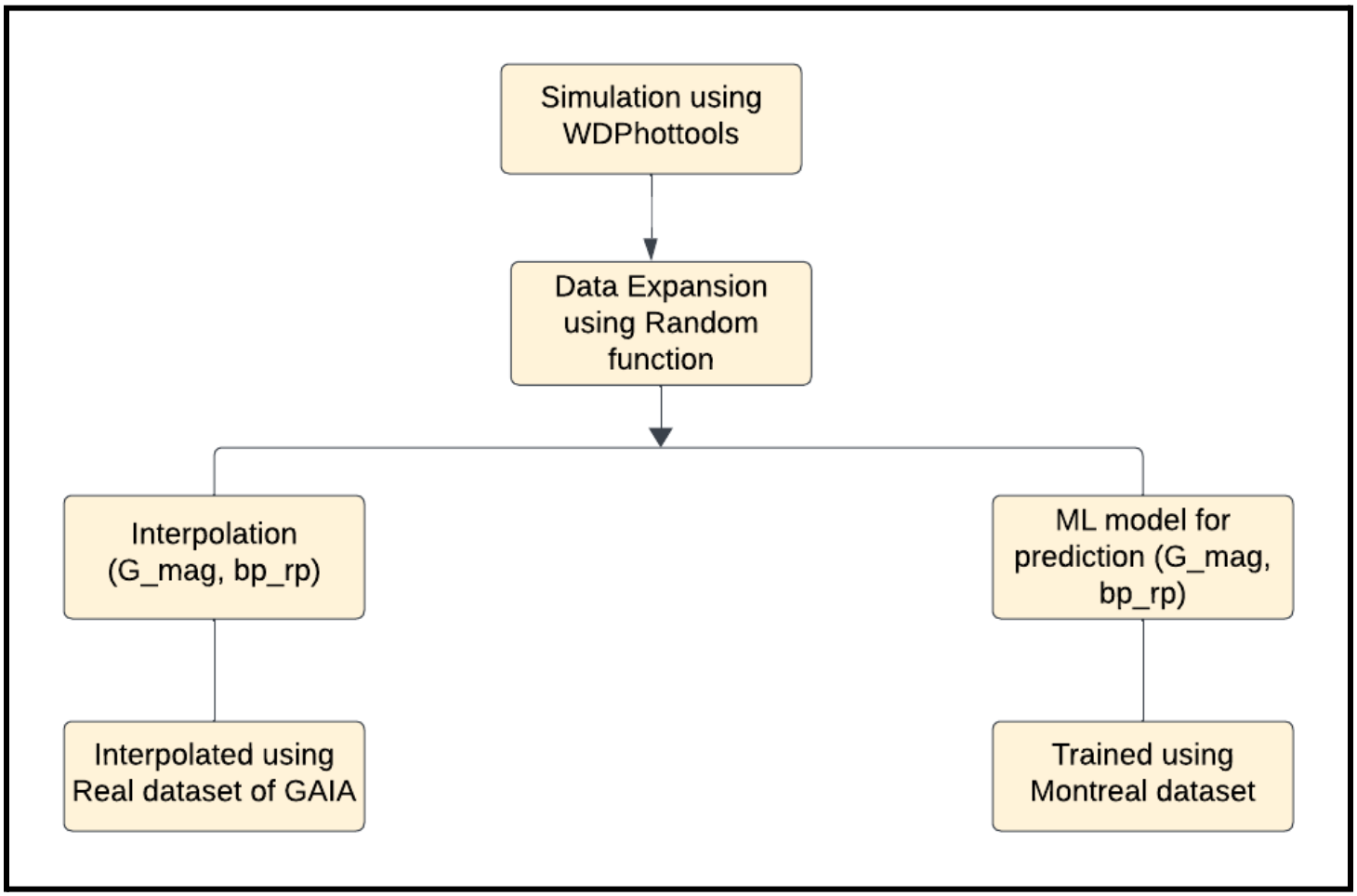
Progress on Project

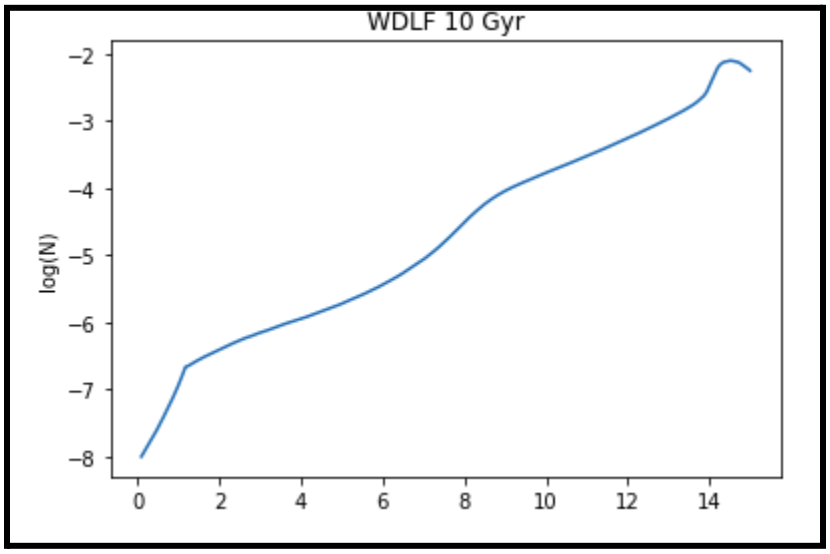
Flow diagram-



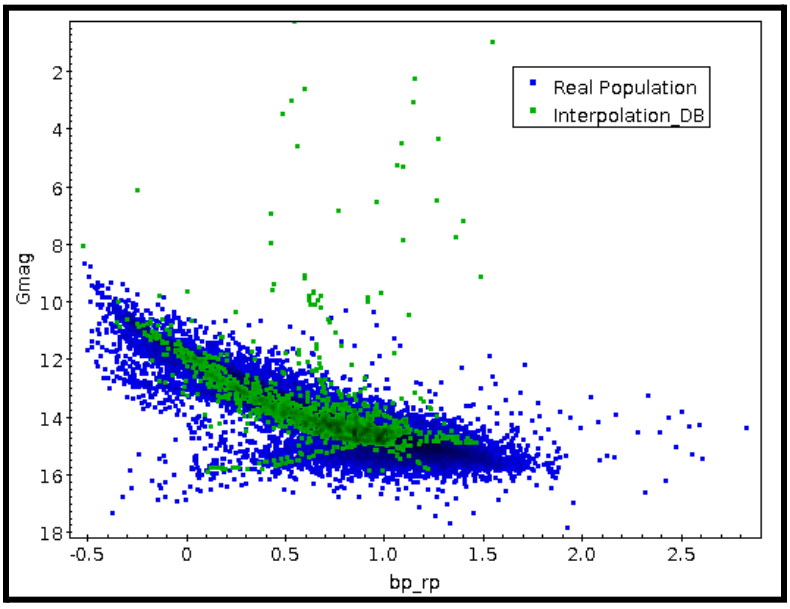
DB Population-

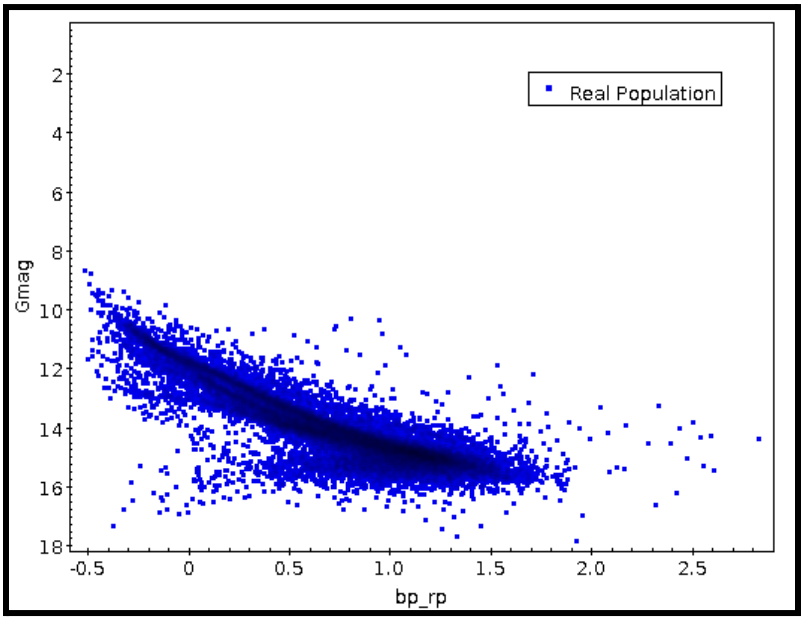
Cooling Model- montreal_co_db_20
IMF Model- C03b
MS Model- PARSECz0017
IFMR Model- S09
SFR Model- mode="constant", age=e10

WDLF-



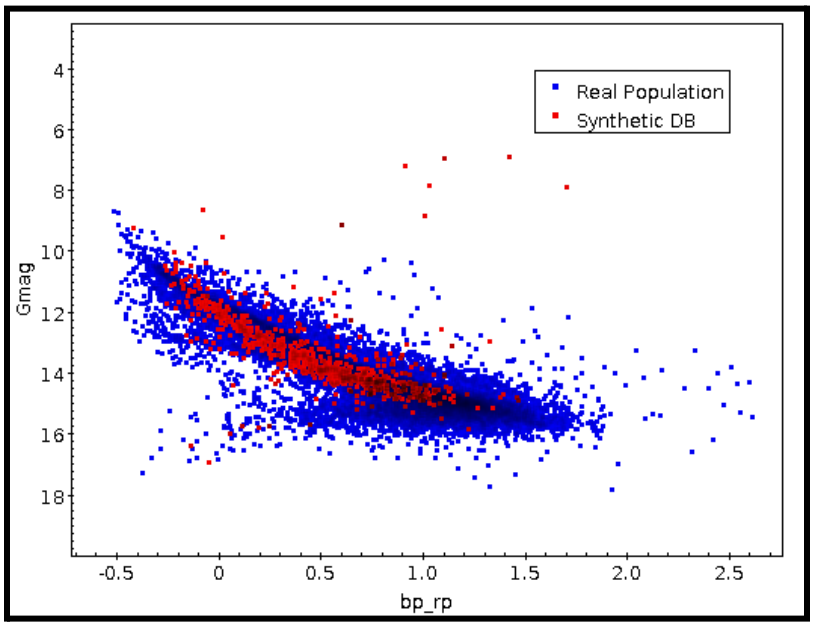
Interpolation Result-

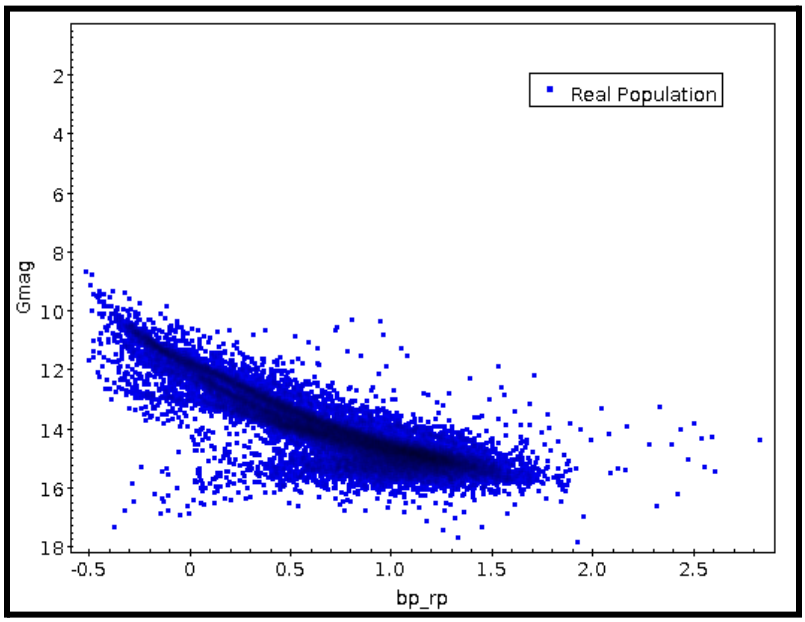




Inference- The DB population generated using interpolation does not exactly follow the observed population trend. It faintly follows the DA population trend that is the upper branch.

ML model Result-



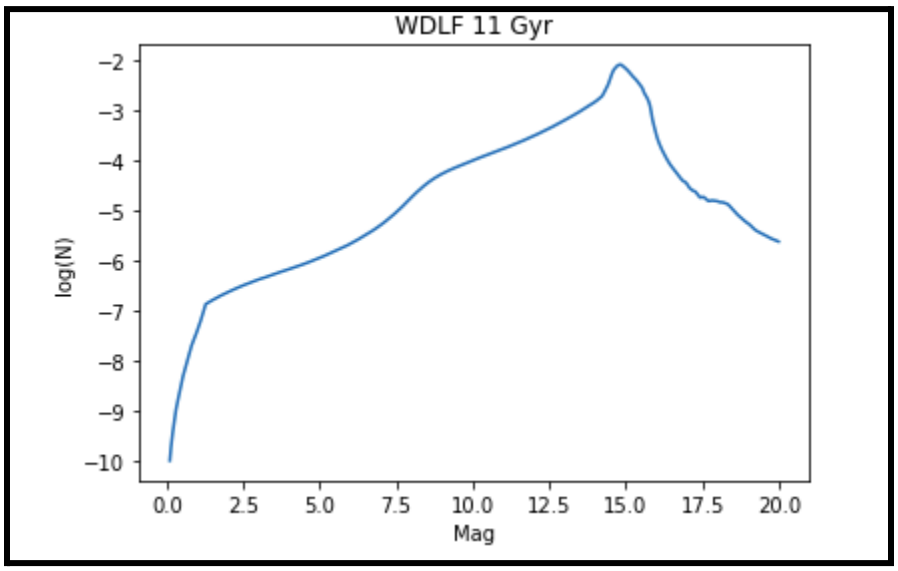


Method- The KNN Model is used in predicting the values of G_mag, and bp_rp parameters. The training is performed by the available Montreal dataset.

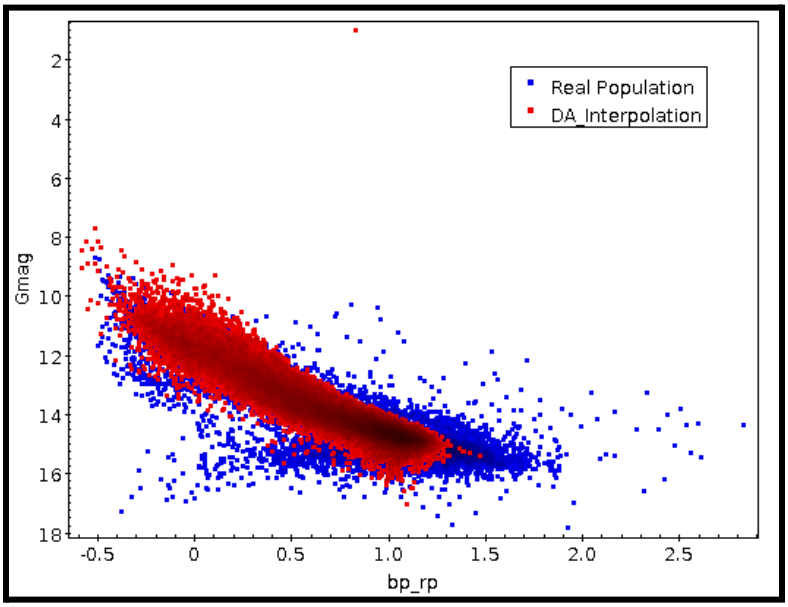
Inference- The ML model result shows that the synthetic DB population follows the observed trend of the DB population.

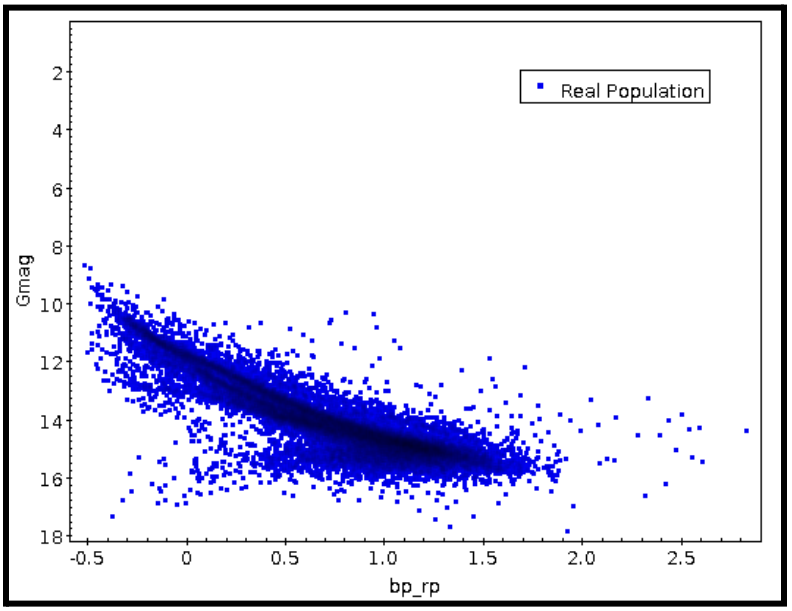
DA Population-

Cooling Model- montreal_co_da_20
IMF Model- C03b
MS Model- PARSECz0017
IFMR Model- S09
SFR Model- mode="constant", age=1.1e10



Interpolation Result-

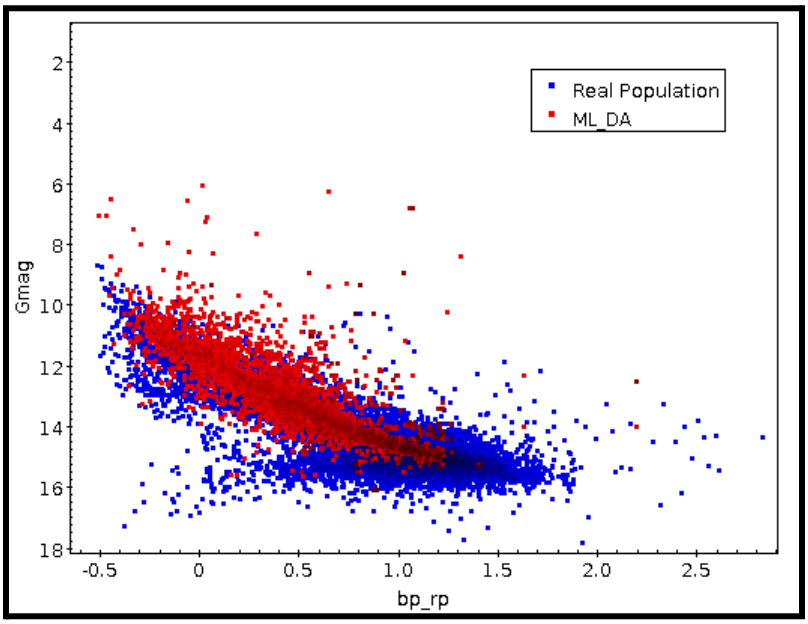


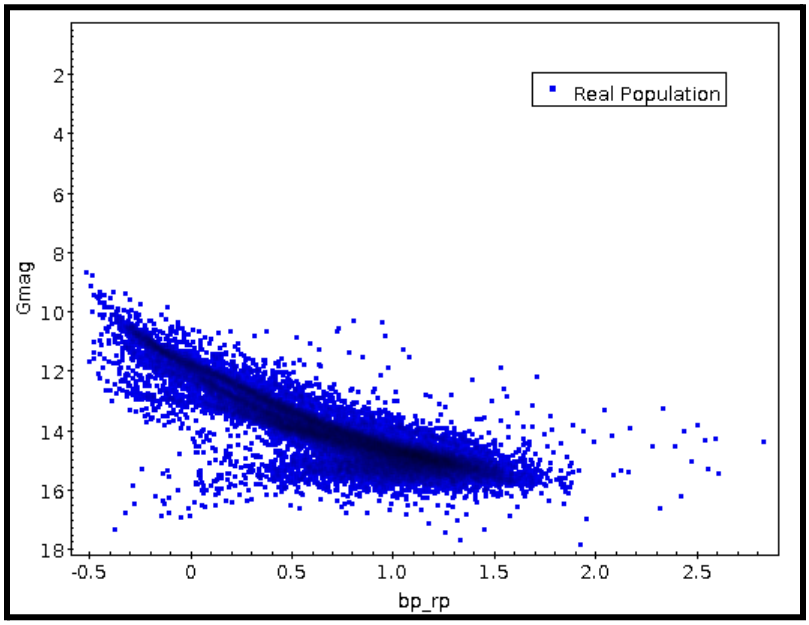


Inference-

The interpolated synthetic dataset of DA population follows the trend of observed population. Though the branch is not clearly visible but most of the data points lie in the zone.

ML Result-





Inference-

The ML generated synthetic data of DA stars is more consistent with the observed data as the separate branch is clear in this case.