

To create a continuous model of the relationship between MEF and the Mach number using the provided data, we used the interpolation module within scipy. More specifically, we utilized `scipy.interpolate.interp1d` with a cubic interpolation of the data values. Below we plotted the data points with the interpolation function.

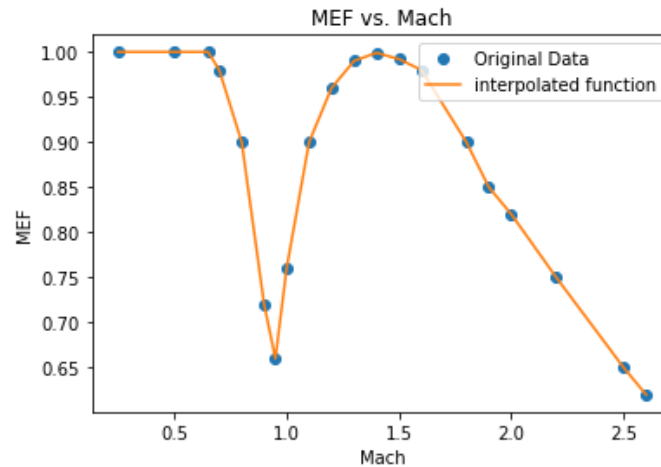


Figure 1: Interpolation results from Mach vs. MEF Data

We chose this modeling method because `interp1d` is a quick and accurate interpolating method. This means that we can find in between values and then use the provided equation to find the modified C_d value.

The parachute requirements do not need modifying because the assumption provided versus the modified version of the drag coefficient have minor changes. Figure 2, on the next page, shows the parachute study plots with the constant coefficient while Figure 3 shows the parachute study plots with a variable drag coefficient.

`F_drag_decent_mod_FUNCTION.py` has the modified `F_drag_decent` function and a helper function that does the interpolation and calculation of the drag coefficient value. It is attached with the submission.

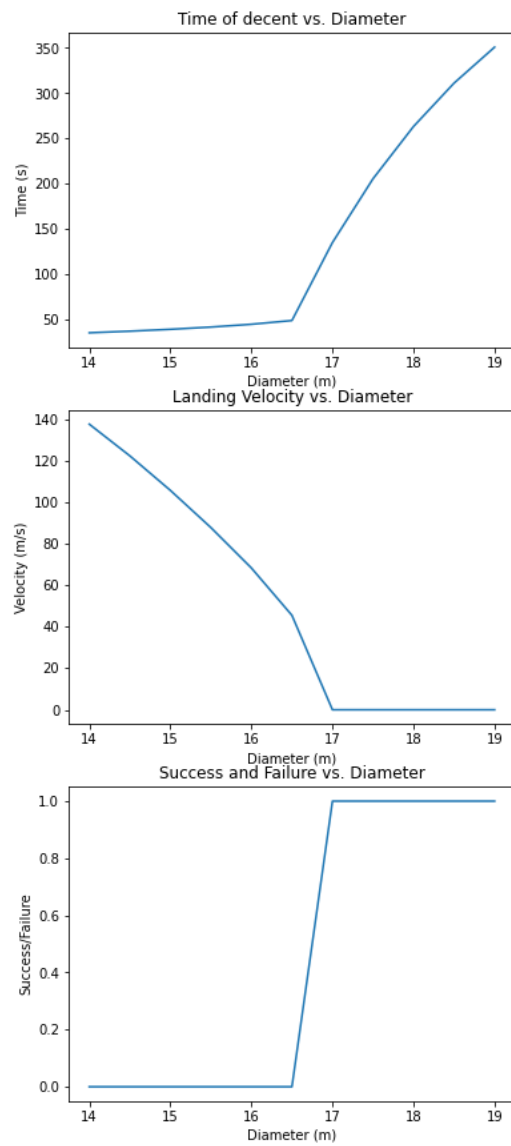


Figure 2: Constant Drag Coefficient

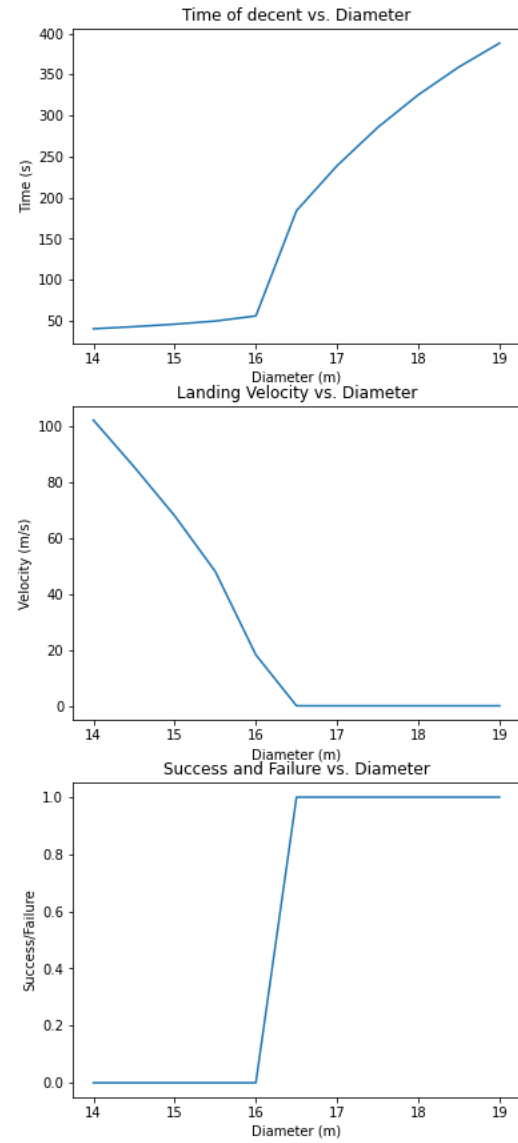


Figure 3: Variable Drag Coefficient