TelescopeML

① **Build**

Module:
- Define X, y
- Split train, val,
- Normalize/

② **Train**

Module:
- Create neural
- Train with
- Utilize

③ **Predict**

Module:
- Process Telescope
- Deploy trained
- Predict target
- Reports Stat.

④ **Statistic Report**

Module:
- Interpolati
- Plot, Report,
- χ^2 Stat test, p-
- Uncertainty

Training set

Scaled

Main features

	input:	[(None, 104, 1)]
input_9		
InputLayer	output:	[(None, 104, 1)]

| conv1d_20 | input: | (None, 104, 1) |
| Conv1D | output: | (None, 102, 32) |

| conv1d_21 | input: | (None, 102, 32) |
| Conv1D | output: | (None, 100, 64) |

| conv1d_22 | input: | (None, 100, 64) |
| Conv1D | output: | (None, 98, 128) |

CNNs

Engineered Features

| flatten_4 | input: | (None, 22, 512) |
| Flatten | output: | (None, 11264) |

| input_10 | input: | [(None, 2)] |
| InputLayer | output: | [(None, 2)] |

| Concatenated_Layer | input: | [(None, 11264), (None, 2)] |
| Concatenate | output: | (None, 11266) |

| dense_8 | input: | (None, 11266) |
| Dense | output: | (None, 128) |

| dense_9 | input: | (None, 128) |
| Dense | output: | (None, 512) |

FC Layers

Outputs

| | input: | (None, 512) | c_o_ratio | input: | (None, 512) | metallicity | input: | (None, 512) | temperature | input: | (None, 512) |
| Dense | output: | (None, 1) | Dense | output: | (None, 1) | Dense | output: | (None, 1) | Dense | output: | (N |

Flux (Fv)

— ML Predicted:logg= 5.03, C/O= 1.5, [M/H]= -0.47, T= 803.66
Confidence Level: 0.95%
1σ
HD3651B: Observational data

Features (Wavelength [μm])