DAF  $\uparrow$  Prec  $\uparrow$  Acc  $\uparrow$  TPR  $\uparrow$  TNR  $\uparrow$  MAE  $\downarrow$  RMSE  $\downarrow$  R<sup>2</sup>  $\uparrow$ 

0.955 0.814 0.972 0.035

0.986

0.987

0.941

0.919

0.893

0.803

0.712 0.718 0.693 0.118

0.02

0.028

0.026

0.036

0.045

0.048

0.057

0.075

0.093

0.13

0.138

0.113

0.148

0.124 0.184

0.11

0.868 0.063

0.072

0.077

0.08

0.085

0.085

0.091

0.092

0.101

0.103

0.118

0.154

0.206

0.233

0.182

0.186

0.167

0.212

0.848

0.824

0.812

0.785

0.788

0.756

0.75

0.697

0.689

0.585

0.297

0.019

0.151

0

-0.329

0.975 0.91

0.965 0.841

0.922 0.817

0.904 0.818

0.878 0.796

0.851 0.758

0.786 0.693

0.957 0.856 0.975

0.941 0.864 0.953

0.813 0.803 0.813

0.841 0.672 0.872

0.826 0.585 0.87

0.818 0.605 0.857

0.745 0.719 0.75

0.668 0.535 0.692

0.687 0.232 0.769

**Training Set** 

17M (MatterSim)

6M (89.0M) (GNoME)

146K (1.6M) (MPtrj)

146K (1.6M) (MPtrj)

146K (1.6M) (MPtrj)

146K (1.6M) (MPtrj)

146K (1.6M) (MPtri)

63K (188.3K) (MPF)

155K (MP 2022)

155K (MP 2022)

133K (MP Graphs)

155K (MP 2022)

-0.248 133K (MP Graphs)

-0.603 155K (MP 2022)

-0.018 155K (MP 2022)

3M (102.4M) (<u>OMat24</u>+<u>MPtrj</u>)

3M (32.1M) (MPtrj + Alex)

**Model Params Targets Date Added** 

EFS<sub>D</sub>

EFS<sub>D</sub>

EFS<sub>D</sub>

EF<sub>C</sub>

EFS<sub>D</sub>

EFS<sub>D</sub>

EFS<sub>C</sub>

EFS<sub>C</sub>

EFS<sub>C</sub>M

EFS<sub>C</sub>

Energy

Energy

Energy

Energy

Energy

Energy

Energy

2024-10-18

2024-10-11

2024-06-16

2024-02-03

2024-10-18

2024-10-14

2024-07-13

2023-07-14

2023-03-03

2022-09-20

2023-06-02

2022-11-14

2022-12-28

2023-02-03

2022-11-26

2022-11-17

2022-11-26

86.6M

25.2M

182.0M

16.2M

31.2M

25.2M

842.4K

412.5K

227.5K

167.8K

167.8K

26.2M

128.4K (N=10)

128.4K (N=10)

5.2M (N=10)

4.0M

4.7M

Model

eqV2 M

MatterSim

eqV2 S DeNS

ORB MPtrj

SevenNet

MACE

CHGNet

M3GNet

**ALIGNN** 

**MEGNet** 

**CGCNN** 

**BOWSR** 

Dummy

CGCNN+P

Wrenformer

Voronoi RF

**GNoME** 

ORB

6.05

6.04

0.917

0.88

0.859 5.65

0.829 5.52

0.815 5.04

0.765 4.7

0.724 4.25

0.669 3.78

0.613 3.36

0.569 2.88

0.567 3.21

0.51

0.507

0.466

0.423 1.96

0.333 1.58

0.185 1

2.96

2.85

2.56

2.26

0.924

0.924

0.863

0.844

0.771

0.719

0.65

0.577

0.514

0.441

0.49

0.452

0.436

0.392

0.345

0.241

0.154

0.3