House_Price_Prediction_using_Regression

June 10, 2024

1 HOUSE PRICE PREDICTION USING NEAURAL NETWORK

2 OBJECTIVE

2.1 Predicting home prices accurately poses a significant challenge due to various influencing factors like property attributes, location, economic conditions, and market dynamics.

1. Buyers rely on precise estimates to make informed investment decisions, ensuring they secure fair deals without overpaying.
2. Sellers benefit from understanding their property's value, allowing them to set competitive prices and maximize profits.

AIM: ### Develop robust house price prediction models. These models, by considering a multitude of variables including property features, economic indicators, and market trends, aim to provide accurate predictions aligned closely with actual sales prices

3 Table of Contents

[ ]:
```
# importing libraries

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
import seaborn as sns


import warnings
warnings.filterwarnings('ignore')

plt.style.use('seaborn-whitegrid')
```

[ ]:
```
#reading the dataset

df = pd.read_csv('/content/train(1).csv')

df.head()
```

[ ]:
```
   Id  MSSubClass MSZoning  LotFrontage  LotArea Street Alley LotShape  \
0   1          60       RL         65.0     8450   Pave   NaN      Reg
1   2          20       RL         80.0     9600   Pave   NaN      Reg
2   3          60       RL         68.0    11250   Pave   NaN      IR1
3   4          70       RL         60.0     9550   Pave   NaN      IR1
4   5          60       RL         84.0    14260   Pave   NaN      IR1

  LandContour Utilities  … PoolArea PoolQC Fence MiscFeature MiscVal MoSold  \
0         Lvl    AllPub  …        0    NaN   NaN         NaN       0      2
1         Lvl    AllPub  …        0    NaN   NaN         NaN       0      5
2         Lvl    AllPub  …        0    NaN   NaN         NaN       0      9
3         Lvl    AllPub  …        0    NaN   NaN         NaN       0      2
4         Lvl    AllPub  …        0    NaN   NaN         NaN       0     12

  YrSold  SaleType  SaleCondition  SalePrice
0   2008        WD         Normal     208500
1   2007        WD         Normal     181500
2   2008        WD         Normal     223500
3   2006        WD        Abnorml     140000
4   2008        WD         Normal     250000

[5 rows x 81 columns]
```

[ ]:
```
#checking the shape

df.shape
```

[ ]:
```
(1460, 81)
```

4 Data Cleaning and Exploration

[ ]:
```
# checking duplicates

df.drop_duplicates(inplace=True)
```

[ ]:
```
df.isnull().sum()
```

[ ]:
```
Id                0
MSSubClass        0
MSZoning          0
LotFrontage     259
LotArea           0
                 …
MoSold            0
YrSold            0
SaleType          0
SaleCondition     0
SalePrice         0
Length: 81, dtype: int64
```

[ ]:
```
# check the dataframe for the entire for null data

null_data = df[df.isnull().any(axis=1)]
null_data
```

[ ]:
```
        Id  MSSubClass MSZoning  LotFrontage  LotArea Street Alley LotShape  \
0        1          60       RL         65.0     8450   Pave   NaN      Reg
1        2          20       RL         80.0     9600   Pave   NaN      Reg
2        3          60       RL         68.0    11250   Pave   NaN      IR1
3        4          70       RL         60.0     9550   Pave   NaN      IR1
4        5          60       RL         84.0    14260   Pave   NaN      IR1
…      …          …       …           …       …    …    …       …
1455  1456          60       RL         62.0     7917   Pave   NaN      Reg
1456  1457          20       RL         85.0    13175   Pave   NaN      Reg
1457  1458          70       RL         66.0     9042   Pave   NaN      Reg
1458  1459          20       RL         68.0     9717   Pave   NaN      Reg
1459  1460          20       RL         75.0     9937   Pave   NaN      Reg

     LandContour Utilities  … PoolArea PoolQC  Fence MiscFeature MiscVal  \
0            Lvl    AllPub  …        0    NaN    NaN         NaN       0
1            Lvl    AllPub  …        0    NaN    NaN         NaN       0
2            Lvl    AllPub  …        0    NaN    NaN         NaN       0
3            Lvl    AllPub  …        0    NaN    NaN         NaN       0
4            Lvl    AllPub  …        0    NaN    NaN         NaN       0
…          …       …  …      …     …    …           …      …
1455         Lvl    AllPub  …        0    NaN    NaN         NaN       0
```

```
1456          Lvl    AllPub  …        0    NaN  MnPrv         NaN       0
1457          Lvl    AllPub  …        0    NaN  GdPrv        Shed    2500
1458          Lvl    AllPub  …        0    NaN    NaN         NaN       0
1459          Lvl    AllPub  …        0    NaN    NaN         NaN       0

     MoSold YrSold  SaleType  SaleCondition  SalePrice
0         2   2008        WD         Normal     208500
1         5   2007        WD         Normal     181500
2         9   2008        WD         Normal     223500
3         2   2006        WD        Abnorml     140000
4        12   2008        WD         Normal     250000
…      …     …       …              …          …
1455      8   2007        WD         Normal     175000
1456      2   2010        WD         Normal     210000
1457      5   2010        WD         Normal     266500
1458      4   2010        WD         Normal     142125
1459      6   2008        WD         Normal     147500

[1460 rows x 81 columns]
```

[ ]:
```
# Checking NaN data
data_nan_per_column = df.isna().sum()
data_nan_total = df.isna().sum().sum()

print("NaN data per column:")
print(data_nan_per_column)
print("\nTotal NaN data in DataFrame:", data_nan_total)
```

```
NaN data per column:
Id                  0
MSSubClass          0
MSZoning            0
LotFrontage       259
LotArea             0
                   …
MoSold              0
YrSold              0
SaleType            0
SaleCondition       0
SalePrice           0
Length: 81, dtype: int64

Total NaN data in DataFrame: 7829
```

[ ]:
```
# Check columns with NaN values
columns_with_nan = df.columns[df.isnull().any()]

# Show columns with NaN values
```

```
print("Columns with NaN values:", columns_with_nan)
```

```
Columns with NaN values: Index(['LotFrontage', 'Alley', 'MasVnrType',
'MasVnrArea', 'BsmtQual',
       'BsmtCond', 'BsmtExposure', 'BsmtFinType1', 'BsmtFinType2',
       'Electrical', 'FireplaceQu', 'GarageType', 'GarageYrBlt',
       'GarageFinish', 'GarageQual', 'GarageCond', 'PoolQC', 'Fence',
       'MiscFeature'],
      dtype='object')
```

[ ]:
```
# Checking for missing data
data_missing = df.isnull()

print("Missing data by column:")
data_missing
```

```
Missing data by column:
```

[ ]:

	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	\
0	False	False	False	False	False	False	True	
1	False	False	False	False	False	False	True	
2	False	False	False	False	False	False	True	
3	False	False	False	False	False	False	True	
4	False	False	False	False	False	False	True	
…	…	…	…	…	…	…	…	
1455	False	False	False	False	False	False	True	
1456	False	False	False	False	False	False	True	
1457	False	False	False	False	False	False	True	
1458	False	False	False	False	False	False	True	
1459	False	False	False	False	False	False	True	

	LotShape	LandContour	Utilities	…	PoolArea	PoolQC	Fence	\
0	False	False	False	…	False	True	True	
1	False	False	False	…	False	True	True	
2	False	False	False	…	False	True	True	
3	False	False	False	…	False	True	True	
4	False	False	False	…	False	True	True	
…	…	…	…	…	…	…	…	
1455	False	False	False	…	False	True	True	
1456	False	False	False	…	False	True	False	
1457	False	False	False	…	False	True	False	
1458	False	False	False	…	False	True	True	
1459	False	False	False	…	False	True	True	

	MiscFeature	MiscVal	MoSold	YrSold	SaleType	SaleCondition	SalePrice
0	True	False	False	False	False	False	False
1	True	False	False	False	False	False	False
2	True	False	False	False	False	False	False

```
3            True    False   False   False     False          False      False
4            True    False   False   False     False          False      False
…             …       …       …       …         …              …          …
1455         True    False   False   False     False          False      False
1456         True    False   False   False     False          False      False
1457        False    False   False   False     False          False      False
1458         True    False   False   False     False          False      False
1459         True    False   False   False     False          False      False

[1460 rows x 81 columns]
```

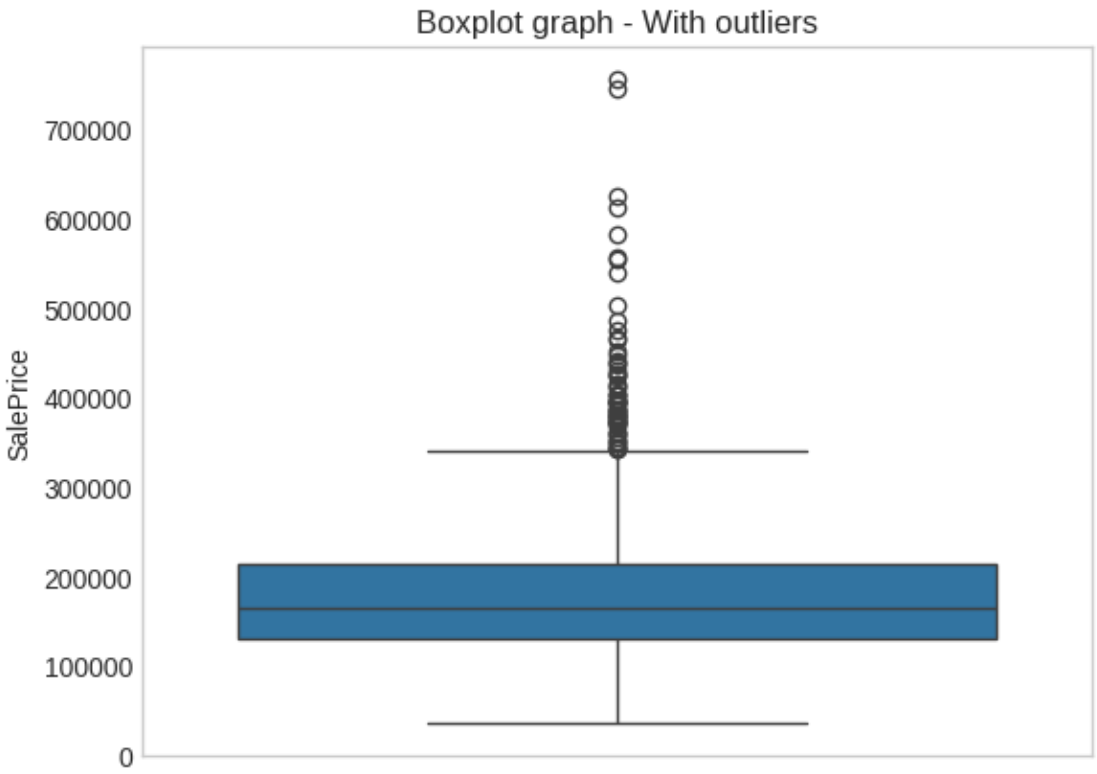
[ ]:
```
#drop null values

df.dropna(inplace=True)
```

[ ]:
```
# Print the total number of missing values in the entire DataFrame.
total_missing = df.isnull().sum().sum()
print("Total data missing in DataFrame:", total_missing)
```

```
Total data missing in DataFrame: 7829
```

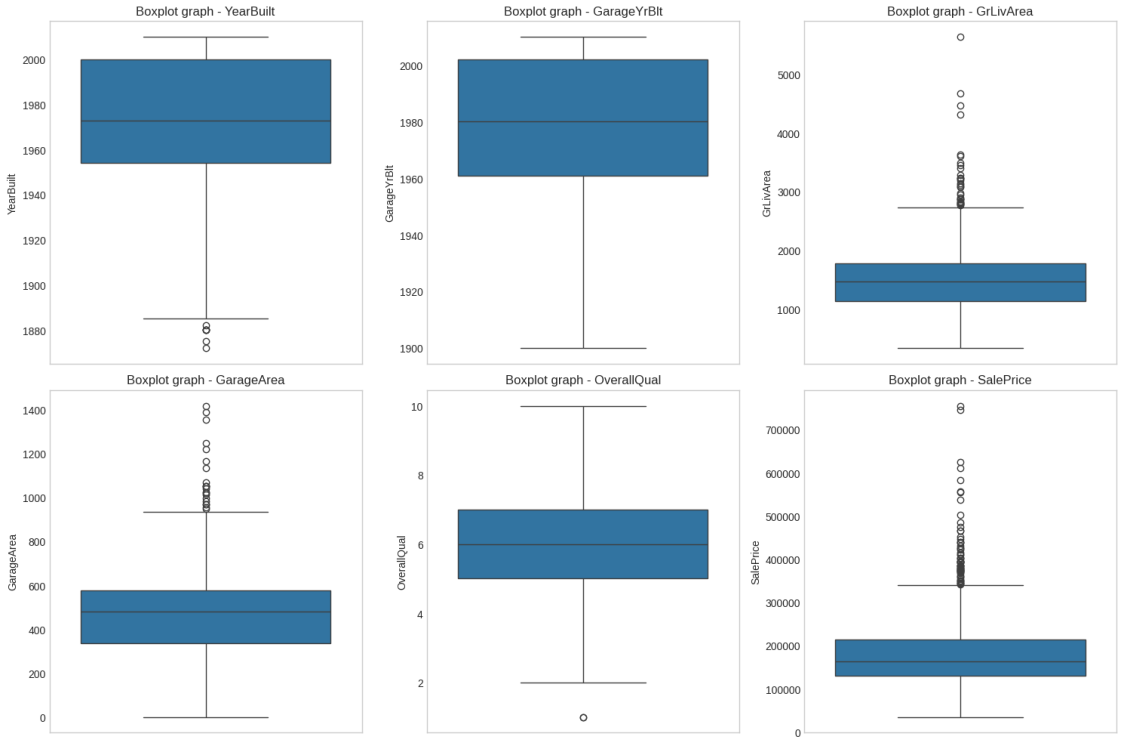
5 Outlier Removal

[ ]:
```
# Target column chart with outliers
sns.boxplot(df["SalePrice"])
plt.title("Boxplot graph - With outliers")
plt.grid(False)
plt.show()
```



5.0.1 The chart reveals outliers in the target column, indicating significant deviations from the majority of data. To maintain analysis accuracy, outliers will be removed using statistical methods like the interquartile range (IQR) or z-score analysis.

[ ]:
```
# Define variables for boxplots
columns = ["YearBuilt", "GarageYrBlt", "GrLivArea", "GarageArea",␣
 ↪"OverallQual", "SalePrice"]

# Create a figure and axes for the subplots
fig, axes = plt.subplots(nrows=2, ncols=3, figsize=(15, 10))

# Iterate over the variables and plot the boxplots
for i, column in enumerate(columns):
    sns.boxplot(df[column], ax=axes[i//3, i%3])
    axes[i//3, i%3].set_title(f"Boxplot graph - {column}")
    axes[i//3, i%3].grid(False)

# Adjust the layout
plt.tight_layout()
plt.show()
```

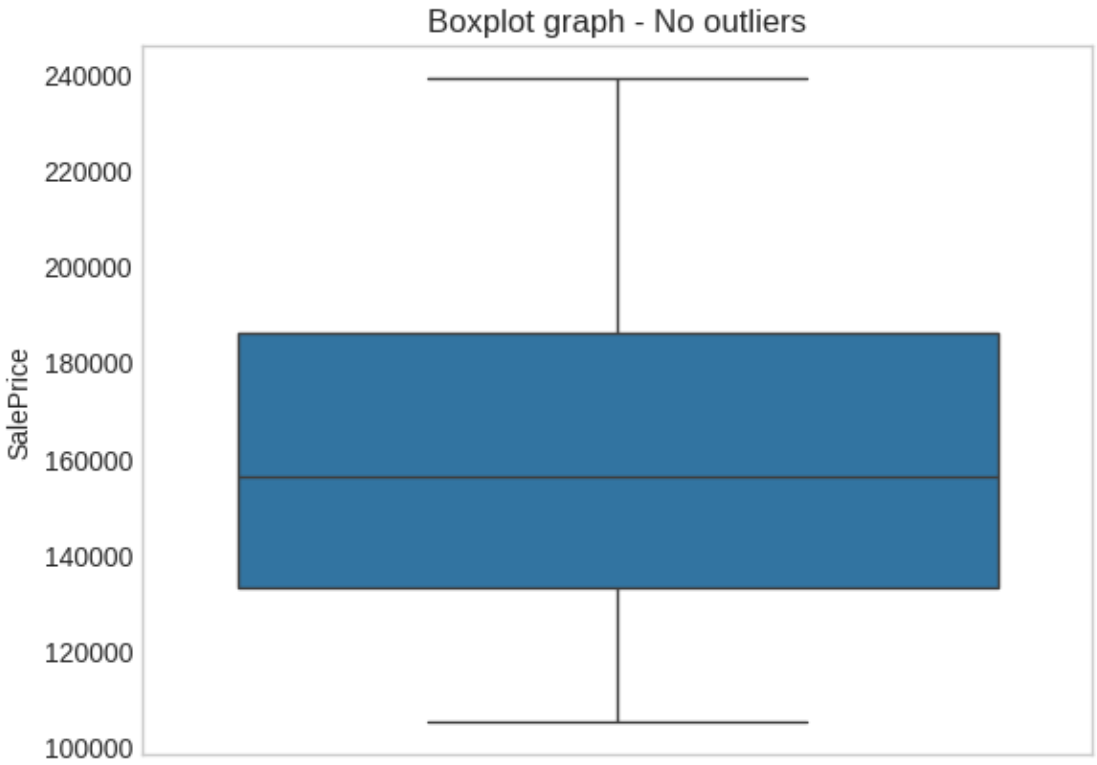


5.0.2 Performing a boxplot analysis to check for variables with outliers. The boxplot is a graphical tool that allows us to quickly identify the presence of outliers and understand the data distribution

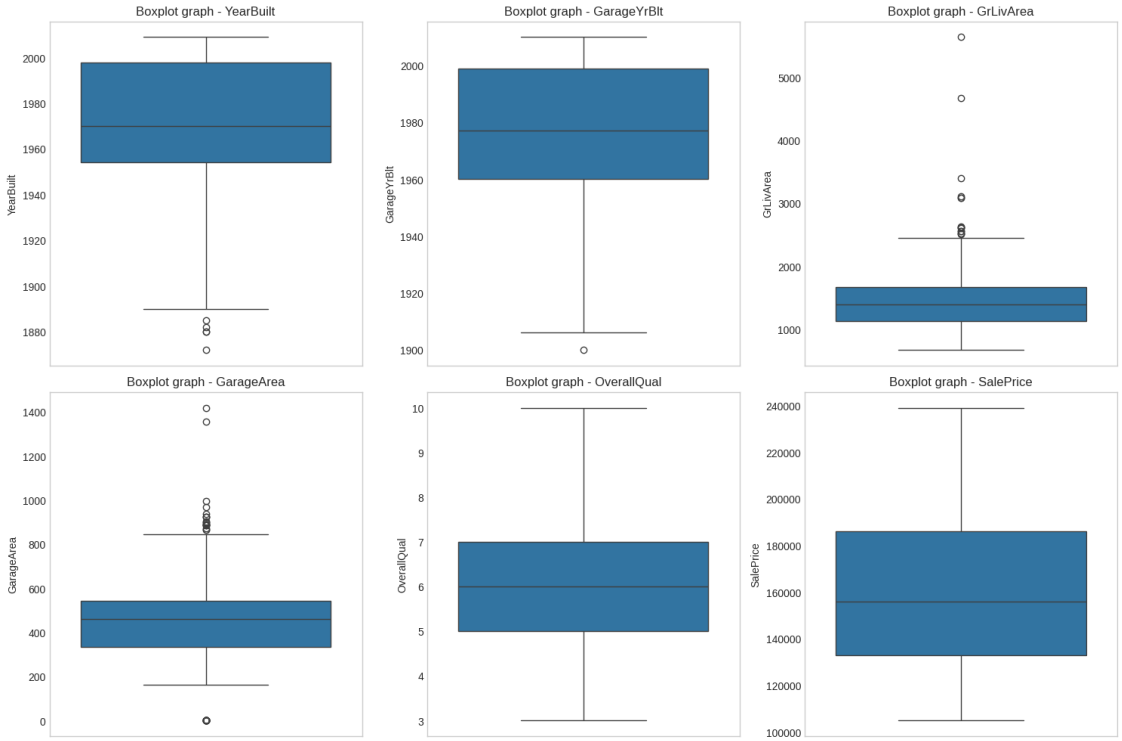
[ ]:
```
### Outlier removal

# interest column
Q1 = df['SalePrice'].quantile(0.25)
Q3 = df['SalePrice'].quantile(0.75)
IQR = Q3 - Q1

# Set the thresholds to consider a point as an outlier
lower_bound = Q1 - 0.3 * IQR
upper_bound = Q3 + 0.3 * IQR

# Remove outliers
data = df[(df['SalePrice'] >= lower_bound) & (df['SalePrice'] <= upper_bound)]

# Calculate the limits for each variable
def remove_outliers(data, column, m=3):
    mean = np.mean(data[column])
    std_dev = np.std(data[column])
    lower_bound = mean - m * std_dev
```

```
    upper_bound = mean + m * std_dev
    return lower_bound, upper_bound

# Define the variables of interest
columns = ["YearBuilt", "GarageYrBlt", "GrLivArea", "GarageArea",␣
 ↪"OverallQual", "SalePrice"]

# Set a standard deviation threshold multiplied by m
m = 3

# Calculate limits for each variable and remove outliers
for columns in columns:
    lower_bound, upper_bound = remove_outliers(data, column, m)
    data = data[(data[column] >= lower_bound) & (data[column] <= upper_bound)]

# Reset the index
data.reset_index(drop=True, inplace=True)
```

[ ]:
```
# Graph without outliers applying outlier removal
sns.boxplot(data["SalePrice"])
plt.title("Boxplot graph - No outliers")
plt.grid(False)
plt.show()
```



[ ]:
```
# Define variables for boxplots
columns = ["YearBuilt", "GarageYrBlt", "GrLivArea", "GarageArea",␣
 ↪"OverallQual", "SalePrice"]

# Create a figure and axes for the subplots
fig, axes = plt.subplots(nrows=2, ncols=3, figsize=(15, 10))

# Iterate over the variables and plot the boxplots
for i, column in enumerate(columns):
    sns.boxplot(data[column], ax=axes[i//3, i%3])
    axes[i//3, i%3].set_title(f"Boxplot graph - {column}")
    axes[i//3, i%3].grid(False)

# Adjust the layout
plt.tight_layout()
plt.show()
```



6 Model Training and Testing

[ ]:
```
X = df[["YearBuilt", "GarageYrBlt", "GrLivArea", "GarageArea", "OverallQual"]]␣
  ↪# Pass a list of column names
y = df["SalePrice"]
```

[ ]:
```
X.shape
```

[ ]:
```
(1460, 5)
```

7 Feature Engineering

[ ]:
```
# Importing library
from sklearn.preprocessing import LabelEncoder
from sklearn.impute import SimpleImputer

# Creating the Label encoder
Label_pre = LabelEncoder()
data_cols=data.select_dtypes(exclude=['int','float']).columns
label_col =list(data_cols)

# Applying encoder
data[label_col]=data[label_col].apply(lambda col:Label_pre.fit_transform(col))

# Viewing
Label_pre
```

[ ]:
```
LabelEncoder()
```

[ ]:
```
data.head()
```

[ ]:

	Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape	\
0	1	60	3	65.0	8450	1	2	3	
1	2	20	3	80.0	9600	1	2	3	
2	3	60	3	68.0	11250	1	2	0	
3	4	70	3	60.0	9550	1	2	0	
4	6	50	3	85.0	14115	1	2	0	

	LandContour	Utilities	…	PoolArea	PoolQC	Fence	MiscFeature	MiscVal	\
0	3	0	…	0	3	4	3	0	
1	3	0	…	0	3	4	3	0	
2	3	0	…	0	3	4	3	0	
3	3	0	…	0	3	4	3	0	
4	3	0	…	0	3	2	2	700	

	MoSold	YrSold	SaleType	SaleCondition	SalePrice
0	2	2008	8	4	208500

```
1       5    2007         8              4     181500
2       9    2008         8              4     223500
3       2    2006         8              0     140000
4      10    2009         8              4     143000

[5 rows x 81 columns]
```

[ ]:
```
# Importing libraries
from sklearn.model_selection import train_test_split

# Splitting the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,␣
 ↪random_state=42)

# Viewing X_train rows and columns
print("Viewing X train data:", X_train.shape)

# Viewing y_train rows and columns
print("Viewing y train data:", y_train.shape)
```

```
Viewing X train data: (1168, 5)
Viewing y train data: (1168,)
```

[ ]:
```
from sklearn.impute import SimpleImputer

# Instantiate SimpleImputer
imputer = SimpleImputer(strategy='mean')

# Fit the imputer on X_train
imputer.fit(X_train)

# Transform both X_train and X_test
X_train_imputed = imputer.transform(X_train)

#
X_test_imputed = imputer.transform(X_test)
```

8 Regression Models

[ ]:
```
from sklearn.linear_model import LinearRegression
from xgboost import XGBRegressor
from sklearn.ensemble import RandomForestRegressor, GradientBoostingRegressor

from sklearn.metrics import mean_absolute_error, mean_squared_error
from sklearn.metrics import r2_score
```

[ ]:
```
LR_Model = LinearRegression()
XGB_Model = XGBRegressor()
RF_Model = RandomForestRegressor()
GB_Model = GradientBoostingRegressor(random_state=42)
```

[ ]:
```
LR_Model.fit(X_train_imputed, y_train)
XGB_Model.fit(X_train_imputed, y_train)
RF_Model.fit(X_train_imputed, y_train)
GB_Model.fit(X_train_imputed, y_train)
```

[ ]:
```
GradientBoostingRegressor(random_state=42)
```

[ ]:
```
predictions = LR_Model.predict(X_test_imputed)
predictions1 = XGB_Model.predict(X_test_imputed)
predictions2 = RF_Model.predict(X_test_imputed)
predictions3 = GB_Model.predict(X_test_imputed)

#caluculate the r2score
RS1 = r2_score(y_test, predictions)
RS2 = r2_score(y_test, predictions1)
RS3 = r2_score(y_test, predictions2)
RS4 = r2_score(y_test, predictions3)

print()
```

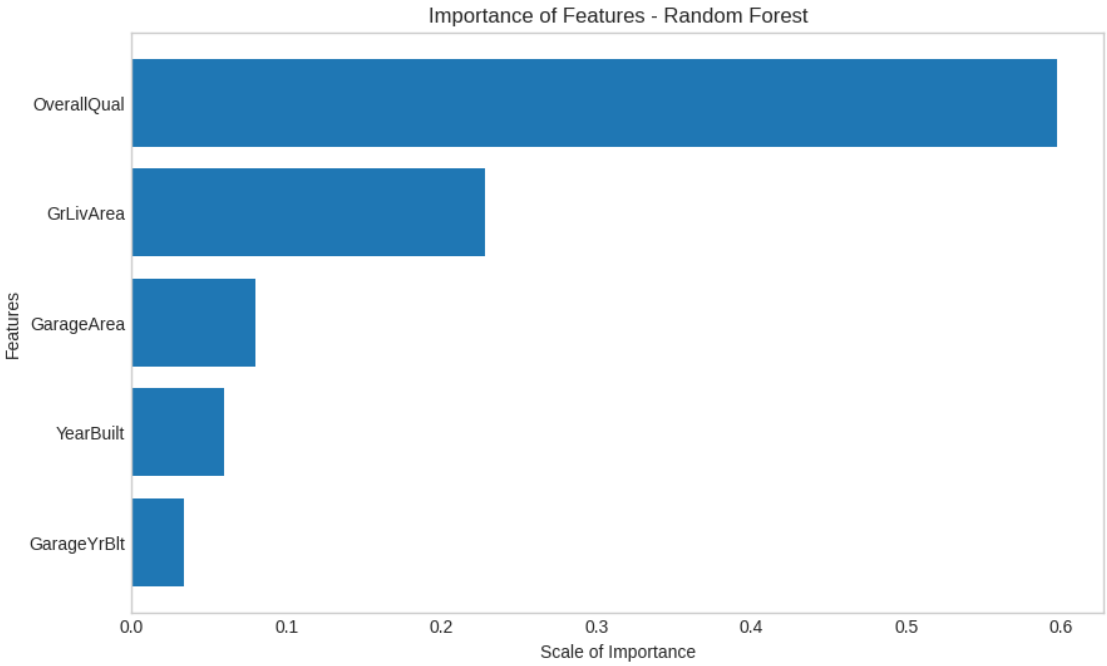
[ ]:
```
from sklearn.metrics import r2_score

# Assuming y_test, predictions, predictions1, predictions2, and predictions3␣
 ↪are already defined

# Model names and their corresponding predictions
models = {
    "LinearRegression": predictions,
    "XGBRegressor": predictions1,
    "RandomForestRegressor": predictions2,
    "GradientBoostingRegressor": predictions3
}

# Calculate and print R-squared scores for each model
for model_name, prediction in models.items():
    r2 = r2_score(y_test, prediction)
    print(f"{model_name}: R2 Score = {r2:.4f}")
```

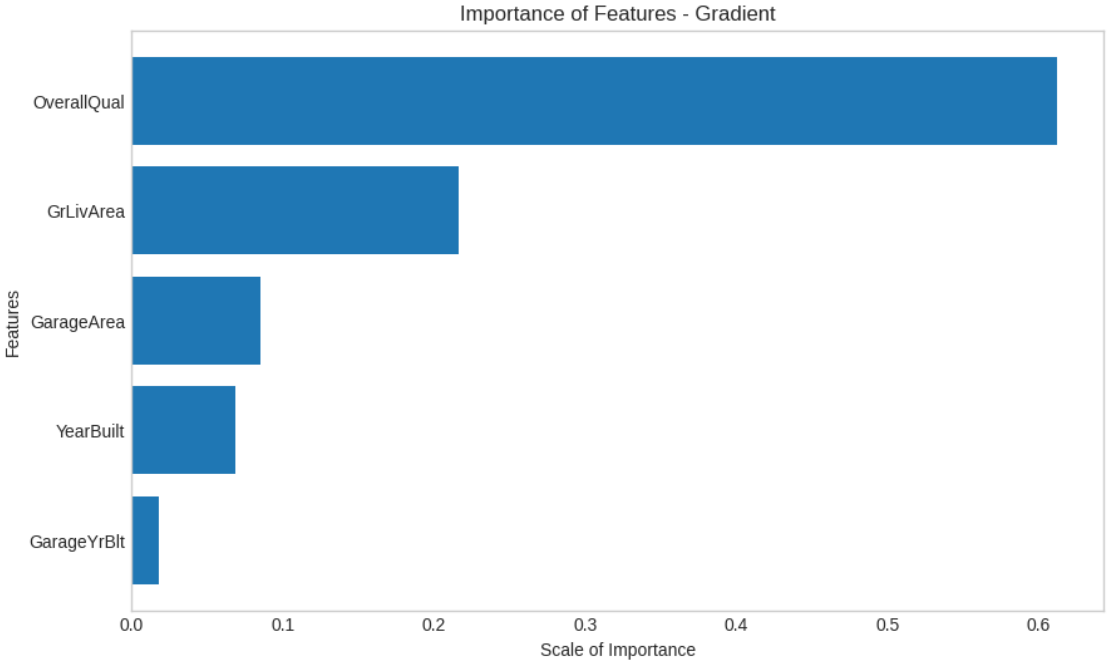
```
LinearRegression: R2 Score = 0.7698
XGBRegressor: R2 Score = 0.8270
RandomForestRegressor: R2 Score = 0.8422
```

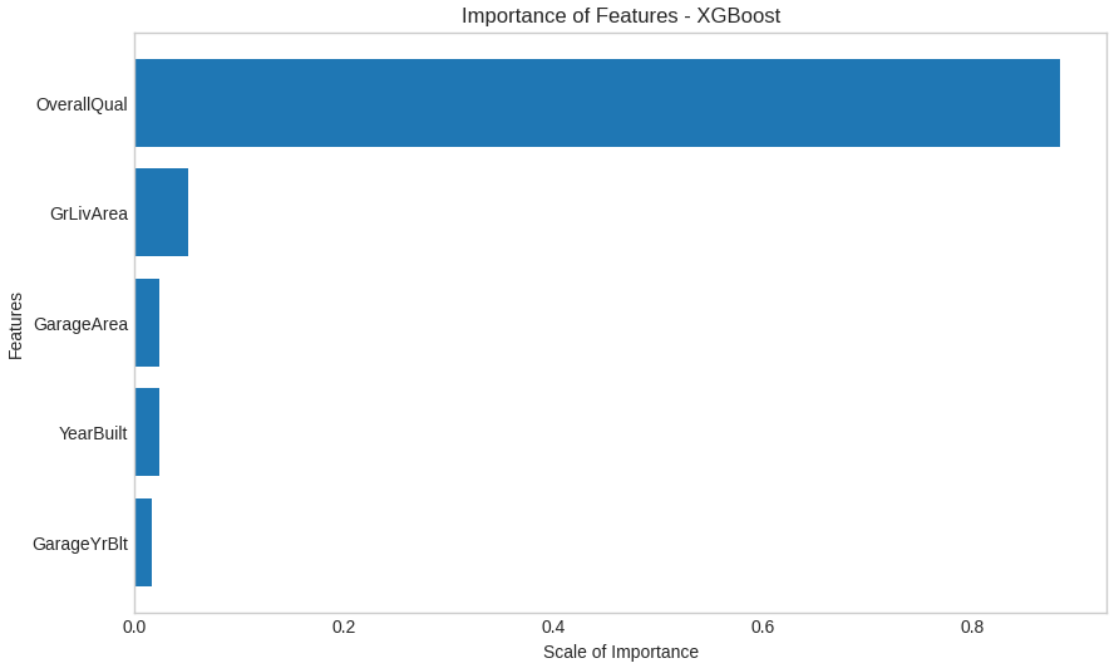
```
GradientBoostingRegressor: R2 Score = 0.8469
```

9 Feature Importance

[ ]:
```python
# Template list
models = {
 "Linear Regression": LinearRegression(),
 "Random Forest": RandomForestRegressor(),
 "Gradient": GradientBoostingRegressor(),
 "XGBoost": XGBRegressor(),
}

# Loop to create and train models
for nome, modelo in models.items():

    # Training the model
    modelo.fit(X_train_imputed, y_train)

    # Checking if the model has a "feature_importances_" attribute or␣
 ↪"feature_importances_" method
    if hasattr(modelo, 'feature_importances_'):

        # Obtendo as importâncias das features
        importancias = modelo.feature_importances_

        # Obtaining the importance of the features
        nomes_features = X_train.columns

        # Ordering the importance and feature names according to their␣
 ↪importance
        indices = np.argsort(importancias)
        importancias = importancias[indices]
        nomes_features = nomes_features[indices]

        # Plotting the importance of features
        plt.figure(figsize=(10, 6))
        plt.barh(range(len(nomes_features)), importancias, align='center')
        plt.yticks(range(len(nomes_features)), nomes_features)
        plt.xlabel('Scale of Importance')
        plt.ylabel('Features')
        plt.title(f'Importance of Features - {nome}')
        plt.grid(False)
        plt.show()
```


Importance of Features - Random Forest
OverallQual
GrLivArea
GarageArea
YearBuilt
GarageYrBlt
Features
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Scale of Importance


Importance of Features - Gradient
OverallQual
GrLivArea
GarageArea
YearBuilt
GarageYrBlt
Features
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Scale of Importance



9.1 Key Observations - XGBoost model

a). OverallQual: This feature has the highest importance by a significant margin.It suggests that the overall quality rating of the property is the most critical factor in the model's predictions.

b). GrLivArea: The second most important feature. Indicates that the above-ground living area square footage is also a crucial factor.

c). YearBuilt: The year the house was built is the third most significant feature. This implies that newer homes may be valued differently than older ones.

d). GarageArea: The garage area contributes meaningfully to the model's predictions. The size of the garage is a key factor in the property's valuation.

e). GarageYrBlt: The year the garage was built also has an impact, though less significant than the overall quality and living area. Reflects the condition or modernity of the garage.

Dominance of OverallQual: The feature "OverallQual" is far more important than any other feature, indicating that the subjective quality rating of the property greatly influences its valuation.

Square Footage and Age: Features related to the size (GrLivArea) and age (YearBuilt, GarageYrBlt) of the house are also important but to a lesser extent.

Secondary Features: Garage area and the total number of rooms above ground level have a moderate to low impact compared to other features.

9.2 Recommendations:

When assessing property value or building a predictive model, emphasize the quality rating of the house (OverallQual) as it plays a crucial role.Consider the living area size, the age of the property, and the garage area as secondary factors. Although features like the number of rooms above ground level are less influential, they should still be included for a comprehensive analysis.

10 Neural Network

[ ]:
```
# Load training and test data
train_data = pd.read_csv('/content/train(1).csv')
test_data = pd.read_csv('/content/test.csv')

# Separate target and predictor variables from the training set
X_train = train_data.drop(columns=['Id', 'SalePrice'])
y_train = train_data['SalePrice']
X_test = test_data.drop(columns=['Id'])
```

[ ]:
```
# identify numerical and categorical columns

numerical_features = X_train.select_dtypes(include=['int', 'float']).columns
categorical_features = X_train.select_dtypes(include=['object']).columns
```

[ ]:
```
# Importing the libraries
from sklearn.preprocessing import StandardScaler, OneHotEncoder
from sklearn.compose import ColumnTransformer
from sklearn.pipeline import Pipeline
from sklearn.impute import SimpleImputer

# Create transformers for preprocessing
numeric_transformer = Pipeline(steps=[('imputer',
                                       SimpleImputer(strategy='median')),
                                      ('scaler', StandardScaler())])

categorical_transformer = Pipeline(steps=[('imputer',
                                           ␣
 ↪SimpleImputer(strategy='most_frequent')),
                                           ('onehot',␣
 ↪OneHotEncoder(handle_unknown='ignore'))])

# Combine transformers using ColumnTransformer
preprocessor = ColumnTransformer(transformers=[('num',
                                                numeric_transformer,␣
 ↪numerical_features),
                                               ('cat',categorical_transformer,␣
 ↪categorical_features)])
```

```
# Adjust the preprocessor and transform training data
X_train = preprocessor.fit_transform(X_train)

# Transform the test data (using the same preprocessor adjusted in the training␣
 ↪data)
X_test = preprocessor.transform(X_test)

# Convert sparse matrices into dense arrays
X_train = X_train.toarray()
X_test = X_test.toarray()
```

[ ]:

11 Nueral Network - Regression

[ ]:
```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
```

[ ]:
```
# simple regression

model = Sequential()
model.add(Dense(128, activation='relu', input_dim=X_train.shape[1]))
model.add(Dense(64, activation='relu'))
model.add(Dense(32, activation='relu'))
model.add(Dense(1))

#complier
model.compile(optimizer='adam', loss='mean_squared_error',␣
 ↪metrics=['mean_absolute_error']  )

model.summary()
```

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 dense_4 (Dense)             (None, 128)               36864

 dense_5 (Dense)             (None, 64)                8256

 dense_6 (Dense)             (None, 32)                2080

 dense_7 (Dense)             (None, 1)                 33

=================================================================
Total params: 47233 (184.50 KB)
```

```
Trainable params: 47233 (184.50 KB)
Non-trainable params: 0 (0.00 Byte)
_________________________________________________________________
```

[ ]:
```
# Train the model
history = model.fit(X_train,
                    y_train,
                    epochs=500,
                    validation_split=0.2,
                    batch_size=32,
                    verbose=2)
```

```
Epoch 1/500
37/37 - 2s - loss: 38815227904.0000 - mean_absolute_error: 180579.1719 -
val_loss: 39900352512.0000 - val_mean_absolute_error: 182197.0312 - 2s/epoch -
57ms/step
Epoch 2/500
37/37 - 0s - loss: 38723190784.0000 - mean_absolute_error: 180335.5781 -
val_loss: 39637995520.0000 - val_mean_absolute_error: 181516.2656 - 168ms/epoch
- 5ms/step
Epoch 3/500
37/37 - 0s - loss: 38012579840.0000 - mean_absolute_error: 178475.3125 -
val_loss: 38156046336.0000 - val_mean_absolute_error: 177643.0625 - 169ms/epoch
- 5ms/step
Epoch 4/500
37/37 - 0s - loss: 35219206144.0000 - mean_absolute_error: 170932.3125 -
val_loss: 33384701952.0000 - val_mean_absolute_error: 164612.3750 - 156ms/epoch
- 4ms/step
Epoch 5/500
37/37 - 0s - loss: 28107114496.0000 - mean_absolute_error: 150174.1719 -
val_loss: 23406790656.0000 - val_mean_absolute_error: 133509.5469 - 181ms/epoch
- 5ms/step
Epoch 6/500
37/37 - 0s - loss: 16308140032.0000 - mean_absolute_error: 107837.9844 -
val_loss: 10566052864.0000 - val_mean_absolute_error: 79166.6094 - 192ms/epoch -
5ms/step
Epoch 7/500
37/37 - 0s - loss: 5717911552.0000 - mean_absolute_error: 50732.2656 - val_loss:
3690365952.0000 - val_mean_absolute_error: 33466.4844 - 220ms/epoch - 6ms/step
Epoch 8/500
37/37 - 0s - loss: 2267839488.0000 - mean_absolute_error: 30092.1172 - val_loss:
2808904704.0000 - val_mean_absolute_error: 33141.4727 - 213ms/epoch - 6ms/step
Epoch 9/500
37/37 - 0s - loss: 1825822976.0000 - mean_absolute_error: 28388.1250 - val_loss:
2568475392.0000 - val_mean_absolute_error: 29746.5137 - 189ms/epoch - 5ms/step
Epoch 10/500
37/37 - 0s - loss: 1581888512.0000 - mean_absolute_error: 25892.0078 - val_loss:
2417538048.0000 - val_mean_absolute_error: 28113.6719 - 213ms/epoch - 6ms/step
```

```
Epoch 11/500
37/37 - 0s - loss: 1411043968.0000 - mean_absolute_error: 23834.9082 - val_loss:
2332193536.0000 - val_mean_absolute_error: 26868.9570 - 194ms/epoch - 5ms/step
Epoch 12/500
37/37 - 0s - loss: 1300366720.0000 - mean_absolute_error: 22832.0293 - val_loss:
2284087040.0000 - val_mean_absolute_error: 26195.8340 - 137ms/epoch - 4ms/step
Epoch 13/500
37/37 - 0s - loss: 1222389120.0000 - mean_absolute_error: 22354.1719 - val_loss:
2260259840.0000 - val_mean_absolute_error: 26015.9414 - 113ms/epoch - 3ms/step
Epoch 14/500
37/37 - 0s - loss: 1158353408.0000 - mean_absolute_error: 21695.9082 - val_loss:
2232157184.0000 - val_mean_absolute_error: 25270.5859 - 112ms/epoch - 3ms/step
Epoch 15/500
37/37 - 0s - loss: 1113417728.0000 - mean_absolute_error: 21420.9902 - val_loss:
2214553600.0000 - val_mean_absolute_error: 24798.6582 - 106ms/epoch - 3ms/step
Epoch 16/500
37/37 - 0s - loss: 1068603328.0000 - mean_absolute_error: 20695.7480 - val_loss:
2214999808.0000 - val_mean_absolute_error: 24886.3457 - 113ms/epoch - 3ms/step
Epoch 17/500
37/37 - 0s - loss: 1031121088.0000 - mean_absolute_error: 20330.6270 - val_loss:
2200925696.0000 - val_mean_absolute_error: 24516.3281 - 115ms/epoch - 3ms/step
Epoch 18/500
37/37 - 0s - loss: 996526080.0000 - mean_absolute_error: 20300.8398 - val_loss:
2190689280.0000 - val_mean_absolute_error: 24106.4238 - 123ms/epoch - 3ms/step
Epoch 19/500
37/37 - 0s - loss: 965173120.0000 - mean_absolute_error: 19767.3359 - val_loss:
2185365760.0000 - val_mean_absolute_error: 23779.9629 - 115ms/epoch - 3ms/step
Epoch 20/500
37/37 - 0s - loss: 940042176.0000 - mean_absolute_error: 19386.3066 - val_loss:
2169456128.0000 - val_mean_absolute_error: 23300.9375 - 119ms/epoch - 3ms/step
Epoch 21/500
37/37 - 0s - loss: 915842048.0000 - mean_absolute_error: 19157.3066 - val_loss:
2167630080.0000 - val_mean_absolute_error: 23212.7305 - 116ms/epoch - 3ms/step
Epoch 22/500
37/37 - 0s - loss: 896513920.0000 - mean_absolute_error: 19019.2539 - val_loss:
2168027136.0000 - val_mean_absolute_error: 23024.3340 - 115ms/epoch - 3ms/step
Epoch 23/500
37/37 - 0s - loss: 879046912.0000 - mean_absolute_error: 18733.1035 - val_loss:
2153813760.0000 - val_mean_absolute_error: 22631.9062 - 113ms/epoch - 3ms/step
Epoch 24/500
37/37 - 0s - loss: 854948800.0000 - mean_absolute_error: 18301.2852 - val_loss:
2165126656.0000 - val_mean_absolute_error: 22762.1758 - 114ms/epoch - 3ms/step
Epoch 25/500
37/37 - 0s - loss: 836258560.0000 - mean_absolute_error: 18223.5508 - val_loss:
2157445376.0000 - val_mean_absolute_error: 22426.8887 - 115ms/epoch - 3ms/step
Epoch 26/500
37/37 - 0s - loss: 821883136.0000 - mean_absolute_error: 17934.5059 - val_loss:
2151531264.0000 - val_mean_absolute_error: 22264.7285 - 118ms/epoch - 3ms/step
```

```
Epoch 27/500
37/37 - 0s - loss: 804556864.0000 - mean_absolute_error: 17543.1719 - val_loss:
2162328320.0000 - val_mean_absolute_error: 22411.5723 - 114ms/epoch - 3ms/step
Epoch 28/500
37/37 - 0s - loss: 791627008.0000 - mean_absolute_error: 17605.8145 - val_loss:
2169535232.0000 - val_mean_absolute_error: 22414.9414 - 113ms/epoch - 3ms/step
Epoch 29/500
37/37 - 0s - loss: 777823744.0000 - mean_absolute_error: 17389.3398 - val_loss:
2167622400.0000 - val_mean_absolute_error: 22199.3301 - 115ms/epoch - 3ms/step
Epoch 30/500
37/37 - 0s - loss: 764858048.0000 - mean_absolute_error: 17159.7422 - val_loss:
2163846400.0000 - val_mean_absolute_error: 22064.7852 - 111ms/epoch - 3ms/step
Epoch 31/500
37/37 - 0s - loss: 755514240.0000 - mean_absolute_error: 16958.7930 - val_loss:
2155508480.0000 - val_mean_absolute_error: 21898.6230 - 113ms/epoch - 3ms/step
Epoch 32/500
37/37 - 0s - loss: 743930240.0000 - mean_absolute_error: 16831.7617 - val_loss:
2152476160.0000 - val_mean_absolute_error: 21794.6465 - 107ms/epoch - 3ms/step
Epoch 33/500
37/37 - 0s - loss: 732325120.0000 - mean_absolute_error: 16669.0488 - val_loss:
2154363904.0000 - val_mean_absolute_error: 21664.4102 - 128ms/epoch - 3ms/step
Epoch 34/500
37/37 - 0s - loss: 723079808.0000 - mean_absolute_error: 16420.0801 - val_loss:
2130144640.0000 - val_mean_absolute_error: 21459.9766 - 168ms/epoch - 5ms/step
Epoch 35/500
37/37 - 0s - loss: 718174976.0000 - mean_absolute_error: 16312.7793 - val_loss:
2130215808.0000 - val_mean_absolute_error: 21370.9668 - 206ms/epoch - 6ms/step
Epoch 36/500
37/37 - 0s - loss: 705047488.0000 - mean_absolute_error: 16381.8818 - val_loss:
2128658944.0000 - val_mean_absolute_error: 21185.7266 - 203ms/epoch - 5ms/step
Epoch 37/500
37/37 - 0s - loss: 701054400.0000 - mean_absolute_error: 16137.8594 - val_loss:
2118456832.0000 - val_mean_absolute_error: 20961.8398 - 153ms/epoch - 4ms/step
Epoch 38/500
37/37 - 0s - loss: 690588992.0000 - mean_absolute_error: 15927.0547 - val_loss:
2137874304.0000 - val_mean_absolute_error: 21225.3770 - 148ms/epoch - 4ms/step
Epoch 39/500
37/37 - 0s - loss: 687054912.0000 - mean_absolute_error: 15899.2500 - val_loss:
2129432704.0000 - val_mean_absolute_error: 21037.0527 - 151ms/epoch - 4ms/step
Epoch 40/500
37/37 - 0s - loss: 672801536.0000 - mean_absolute_error: 15831.5547 - val_loss:
2130310784.0000 - val_mean_absolute_error: 20904.3535 - 143ms/epoch - 4ms/step
Epoch 41/500
37/37 - 0s - loss: 668142272.0000 - mean_absolute_error: 15796.1230 - val_loss:
2115689728.0000 - val_mean_absolute_error: 20579.6973 - 163ms/epoch - 4ms/step
Epoch 42/500
37/37 - 0s - loss: 660693184.0000 - mean_absolute_error: 15561.0000 - val_loss:
2119174528.0000 - val_mean_absolute_error: 20635.1172 - 142ms/epoch - 4ms/step
```

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Epoch 43/500
37/37 - 0s - loss: 655913280.0000 - mean_absolute_error: 15444.0654 - val_loss:
2130535680.0000 - val_mean_absolute_error: 20821.5352 - 147ms/epoch - 4ms/step
Epoch 44/500
37/37 - 0s - loss: 648952576.0000 - mean_absolute_error: 15497.4814 - val_loss:
2113733760.0000 - val_mean_absolute_error: 20441.9707 - 154ms/epoch - 4ms/step
Epoch 45/500
37/37 - 0s - loss: 640356544.0000 - mean_absolute_error: 15336.5176 - val_loss:
2111129088.0000 - val_mean_absolute_error: 20319.8105 - 195ms/epoch - 5ms/step
Epoch 46/500
37/37 - 0s - loss: 636638784.0000 - mean_absolute_error: 15243.7676 - val_loss:
2100602240.0000 - val_mean_absolute_error: 20173.7578 - 200ms/epoch - 5ms/step
Epoch 47/500
37/37 - 0s - loss: 632461376.0000 - mean_absolute_error: 15140.1982 - val_loss:
2118877184.0000 - val_mean_absolute_error: 20460.6055 - 162ms/epoch - 4ms/step
Epoch 48/500
37/37 - 0s - loss: 629605248.0000 - mean_absolute_error: 15054.4268 - val_loss:
2104393984.0000 - val_mean_absolute_error: 20129.3398 - 158ms/epoch - 4ms/step
Epoch 49/500
37/37 - 0s - loss: 622072448.0000 - mean_absolute_error: 14971.6143 - val_loss:
2111724544.0000 - val_mean_absolute_error: 20199.4336 - 163ms/epoch - 4ms/step
Epoch 50/500
37/37 - 0s - loss: 616863744.0000 - mean_absolute_error: 14939.0771 - val_loss:
2118995456.0000 - val_mean_absolute_error: 20166.0293 - 193ms/epoch - 5ms/step
Epoch 51/500
37/37 - 0s - loss: 611305088.0000 - mean_absolute_error: 14814.5459 - val_loss:
2089108352.0000 - val_mean_absolute_error: 19861.6035 - 218ms/epoch - 6ms/step
Epoch 52/500
37/37 - 0s - loss: 610757056.0000 - mean_absolute_error: 14830.6865 - val_loss:
2087712128.0000 - val_mean_absolute_error: 19792.0020 - 163ms/epoch - 4ms/step
Epoch 53/500
37/37 - 0s - loss: 602159616.0000 - mean_absolute_error: 14790.2607 - val_loss:
2094044032.0000 - val_mean_absolute_error: 19820.1387 - 121ms/epoch - 3ms/step
Epoch 54/500
37/37 - 0s - loss: 597999296.0000 - mean_absolute_error: 14630.0137 - val_loss:
2082081024.0000 - val_mean_absolute_error: 19661.5078 - 115ms/epoch - 3ms/step
Epoch 55/500
37/37 - 0s - loss: 595782528.0000 - mean_absolute_error: 14570.2568 - val_loss:
2093694976.0000 - val_mean_absolute_error: 19723.7715 - 105ms/epoch - 3ms/step
Epoch 56/500
37/37 - 0s - loss: 592410624.0000 - mean_absolute_error: 14513.7363 - val_loss:
2101787776.0000 - val_mean_absolute_error: 19769.3945 - 111ms/epoch - 3ms/step
Epoch 57/500
37/37 - 0s - loss: 583240576.0000 - mean_absolute_error: 14396.2705 - val_loss:
2092164992.0000 - val_mean_absolute_error: 19632.4785 - 104ms/epoch - 3ms/step
Epoch 58/500
37/37 - 0s - loss: 580386048.0000 - mean_absolute_error: 14346.4385 - val_loss:
2087953152.0000 - val_mean_absolute_error: 19523.0625 - 118ms/epoch - 3ms/step
```

```
Epoch 59/500
37/37 - 0s - loss: 575451200.0000 - mean_absolute_error: 14272.2686 - val_loss:
2078960128.0000 - val_mean_absolute_error: 19470.8965 - 114ms/epoch - 3ms/step
Epoch 60/500
37/37 - 0s - loss: 581224832.0000 - mean_absolute_error: 14349.4941 - val_loss:
2065452544.0000 - val_mean_absolute_error: 19383.4863 - 112ms/epoch - 3ms/step
Epoch 61/500
37/37 - 0s - loss: 570481856.0000 - mean_absolute_error: 14113.2920 - val_loss:
2087350784.0000 - val_mean_absolute_error: 19496.0996 - 113ms/epoch - 3ms/step
Epoch 62/500
37/37 - 0s - loss: 567146752.0000 - mean_absolute_error: 14148.4326 - val_loss:
2090560256.0000 - val_mean_absolute_error: 19424.7285 - 124ms/epoch - 3ms/step
Epoch 63/500
37/37 - 0s - loss: 563887488.0000 - mean_absolute_error: 14035.3213 - val_loss:
2085341568.0000 - val_mean_absolute_error: 19413.7070 - 113ms/epoch - 3ms/step
Epoch 64/500
37/37 - 0s - loss: 561843712.0000 - mean_absolute_error: 14007.7236 - val_loss:
2075673088.0000 - val_mean_absolute_error: 19293.7578 - 111ms/epoch - 3ms/step
Epoch 65/500
37/37 - 0s - loss: 557348288.0000 - mean_absolute_error: 13923.5723 - val_loss:
2080214528.0000 - val_mean_absolute_error: 19306.3301 - 109ms/epoch - 3ms/step
Epoch 66/500
37/37 - 0s - loss: 559277952.0000 - mean_absolute_error: 13947.4072 - val_loss:
2084473728.0000 - val_mean_absolute_error: 19257.2754 - 109ms/epoch - 3ms/step
Epoch 67/500
37/37 - 0s - loss: 552495040.0000 - mean_absolute_error: 13840.4570 - val_loss:
2094967936.0000 - val_mean_absolute_error: 19430.0840 - 109ms/epoch - 3ms/step
Epoch 68/500
37/37 - 0s - loss: 549525632.0000 - mean_absolute_error: 13841.7852 - val_loss:
2076543872.0000 - val_mean_absolute_error: 19201.9102 - 106ms/epoch - 3ms/step
Epoch 69/500
37/37 - 0s - loss: 543601792.0000 - mean_absolute_error: 13769.0703 - val_loss:
2073138944.0000 - val_mean_absolute_error: 19179.0020 - 114ms/epoch - 3ms/step
Epoch 70/500
37/37 - 0s - loss: 545845568.0000 - mean_absolute_error: 13785.0381 - val_loss:
2070969472.0000 - val_mean_absolute_error: 19094.0293 - 111ms/epoch - 3ms/step
Epoch 71/500
37/37 - 0s - loss: 539038848.0000 - mean_absolute_error: 13711.4912 - val_loss:
2073911424.0000 - val_mean_absolute_error: 19015.9961 - 124ms/epoch - 3ms/step
Epoch 72/500
37/37 - 0s - loss: 538765696.0000 - mean_absolute_error: 13695.5615 - val_loss:
2069629824.0000 - val_mean_absolute_error: 19066.7637 - 108ms/epoch - 3ms/step
Epoch 73/500
37/37 - 0s - loss: 533183904.0000 - mean_absolute_error: 13592.0312 - val_loss:
2057008512.0000 - val_mean_absolute_error: 18915.5508 - 106ms/epoch - 3ms/step
Epoch 74/500
37/37 - 0s - loss: 531589888.0000 - mean_absolute_error: 13558.0254 - val_loss:
2058089600.0000 - val_mean_absolute_error: 18865.6816 - 112ms/epoch - 3ms/step
```

```
Epoch 75/500
37/37 - 0s - loss: 530426720.0000 - mean_absolute_error: 13513.0518 - val_loss:
2065625088.0000 - val_mean_absolute_error: 18952.7344 - 107ms/epoch - 3ms/step
Epoch 76/500
37/37 - 0s - loss: 529631584.0000 - mean_absolute_error: 13464.1367 - val_loss:
2086803840.0000 - val_mean_absolute_error: 18987.0469 - 111ms/epoch - 3ms/step
Epoch 77/500
37/37 - 0s - loss: 524470816.0000 - mean_absolute_error: 13458.7822 - val_loss:
2043044864.0000 - val_mean_absolute_error: 18735.4648 - 110ms/epoch - 3ms/step
Epoch 78/500
37/37 - 0s - loss: 518978240.0000 - mean_absolute_error: 13352.6523 - val_loss:
2071373952.0000 - val_mean_absolute_error: 18918.8398 - 115ms/epoch - 3ms/step
Epoch 79/500
37/37 - 0s - loss: 541078208.0000 - mean_absolute_error: 13804.2051 - val_loss:
2077202816.0000 - val_mean_absolute_error: 19034.2812 - 115ms/epoch - 3ms/step
Epoch 80/500
37/37 - 0s - loss: 519582720.0000 - mean_absolute_error: 13392.3496 - val_loss:
2037047168.0000 - val_mean_absolute_error: 18655.4785 - 121ms/epoch - 3ms/step
Epoch 81/500
37/37 - 0s - loss: 520396512.0000 - mean_absolute_error: 13583.4170 - val_loss:
2046315648.0000 - val_mean_absolute_error: 18712.9648 - 104ms/epoch - 3ms/step
Epoch 82/500
37/37 - 0s - loss: 513404544.0000 - mean_absolute_error: 13244.7949 - val_loss:
2036845696.0000 - val_mean_absolute_error: 18638.7910 - 109ms/epoch - 3ms/step
Epoch 83/500
37/37 - 0s - loss: 512025248.0000 - mean_absolute_error: 13351.1377 - val_loss:
2094307072.0000 - val_mean_absolute_error: 19138.3926 - 109ms/epoch - 3ms/step
Epoch 84/500
37/37 - 0s - loss: 512766464.0000 - mean_absolute_error: 13367.7295 - val_loss:
2072643328.0000 - val_mean_absolute_error: 18757.1465 - 117ms/epoch - 3ms/step
Epoch 85/500
37/37 - 0s - loss: 505739392.0000 - mean_absolute_error: 13153.9961 - val_loss:
2047901696.0000 - val_mean_absolute_error: 18622.4805 - 111ms/epoch - 3ms/step
Epoch 86/500
37/37 - 0s - loss: 502344608.0000 - mean_absolute_error: 13199.3262 - val_loss:
2050412928.0000 - val_mean_absolute_error: 18591.4883 - 103ms/epoch - 3ms/step
Epoch 87/500
37/37 - 0s - loss: 500127616.0000 - mean_absolute_error: 13120.3486 - val_loss:
2030844160.0000 - val_mean_absolute_error: 18590.7695 - 112ms/epoch - 3ms/step
Epoch 88/500
37/37 - 0s - loss: 510443584.0000 - mean_absolute_error: 13225.6748 - val_loss:
2016192384.0000 - val_mean_absolute_error: 18458.9785 - 113ms/epoch - 3ms/step
Epoch 89/500
37/37 - 0s - loss: 501754720.0000 - mean_absolute_error: 13289.2412 - val_loss:
2018142464.0000 - val_mean_absolute_error: 18616.0195 - 120ms/epoch - 3ms/step
Epoch 90/500
37/37 - 0s - loss: 502348576.0000 - mean_absolute_error: 13086.1992 - val_loss:
2012820224.0000 - val_mean_absolute_error: 18460.2090 - 105ms/epoch - 3ms/step
```

```
Epoch 91/500
37/37 - 0s - loss: 494875584.0000 - mean_absolute_error: 13095.8945 - val_loss:
2022507392.0000 - val_mean_absolute_error: 18466.3047 - 111ms/epoch - 3ms/step
Epoch 92/500
37/37 - 0s - loss: 492045920.0000 - mean_absolute_error: 12976.1494 - val_loss:
2038382848.0000 - val_mean_absolute_error: 18620.5234 - 113ms/epoch - 3ms/step
Epoch 93/500
37/37 - 0s - loss: 494320608.0000 - mean_absolute_error: 13215.3965 - val_loss:
2031732992.0000 - val_mean_absolute_error: 18472.9023 - 108ms/epoch - 3ms/step
Epoch 94/500
37/37 - 0s - loss: 487669824.0000 - mean_absolute_error: 13027.6611 - val_loss:
2023218176.0000 - val_mean_absolute_error: 18459.7793 - 112ms/epoch - 3ms/step
Epoch 95/500
37/37 - 0s - loss: 488123232.0000 - mean_absolute_error: 12933.9443 - val_loss:
2032467968.0000 - val_mean_absolute_error: 18470.4707 - 118ms/epoch - 3ms/step
Epoch 96/500
37/37 - 0s - loss: 483758976.0000 - mean_absolute_error: 12924.8164 - val_loss:
2055043712.0000 - val_mean_absolute_error: 18578.2773 - 106ms/epoch - 3ms/step
Epoch 97/500
37/37 - 0s - loss: 482169440.0000 - mean_absolute_error: 12874.4473 - val_loss:
2050241664.0000 - val_mean_absolute_error: 18671.4609 - 113ms/epoch - 3ms/step
Epoch 98/500
37/37 - 0s - loss: 482361504.0000 - mean_absolute_error: 12969.8799 - val_loss:
2033207680.0000 - val_mean_absolute_error: 18449.2520 - 110ms/epoch - 3ms/step
Epoch 99/500
37/37 - 0s - loss: 479473312.0000 - mean_absolute_error: 12885.4346 - val_loss:
2024862208.0000 - val_mean_absolute_error: 18324.7227 - 114ms/epoch - 3ms/step
Epoch 100/500
37/37 - 0s - loss: 480150976.0000 - mean_absolute_error: 12910.0635 - val_loss:
2009587200.0000 - val_mean_absolute_error: 18364.5098 - 105ms/epoch - 3ms/step
Epoch 101/500
37/37 - 0s - loss: 477750816.0000 - mean_absolute_error: 12791.2158 - val_loss:
2019047424.0000 - val_mean_absolute_error: 18325.3164 - 113ms/epoch - 3ms/step
Epoch 102/500
37/37 - 0s - loss: 474815680.0000 - mean_absolute_error: 12765.4326 - val_loss:
2025344256.0000 - val_mean_absolute_error: 18398.8008 - 105ms/epoch - 3ms/step
Epoch 103/500
37/37 - 0s - loss: 476237760.0000 - mean_absolute_error: 12878.8496 - val_loss:
2040371328.0000 - val_mean_absolute_error: 18433.6875 - 118ms/epoch - 3ms/step
Epoch 104/500
37/37 - 0s - loss: 473603808.0000 - mean_absolute_error: 12790.8936 - val_loss:
2010736000.0000 - val_mean_absolute_error: 18442.2988 - 115ms/epoch - 3ms/step
Epoch 105/500
37/37 - 0s - loss: 471045344.0000 - mean_absolute_error: 12754.6592 - val_loss:
2035905408.0000 - val_mean_absolute_error: 18546.2891 - 113ms/epoch - 3ms/step
Epoch 106/500
37/37 - 0s - loss: 473516160.0000 - mean_absolute_error: 12793.1992 - val_loss:
2022347136.0000 - val_mean_absolute_error: 18397.0781 - 121ms/epoch - 3ms/step
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Epoch 107/500
37/37 - 0s - loss: 469735008.0000 - mean_absolute_error: 12795.4336 - val_loss:
2051916288.0000 - val_mean_absolute_error: 18652.0918 - 114ms/epoch - 3ms/step
Epoch 108/500
37/37 - 0s - loss: 468125824.0000 - mean_absolute_error: 12717.9727 - val_loss:
2016953472.0000 - val_mean_absolute_error: 18274.8516 - 115ms/epoch - 3ms/step
Epoch 109/500
37/37 - 0s - loss: 464326784.0000 - mean_absolute_error: 12729.2900 - val_loss:
2008531584.0000 - val_mean_absolute_error: 18251.2168 - 112ms/epoch - 3ms/step
Epoch 110/500
37/37 - 0s - loss: 466225600.0000 - mean_absolute_error: 12701.5469 - val_loss:
2003861504.0000 - val_mean_absolute_error: 18347.0527 - 113ms/epoch - 3ms/step
Epoch 111/500
37/37 - 0s - loss: 469261760.0000 - mean_absolute_error: 12732.7002 - val_loss:
2004898816.0000 - val_mean_absolute_error: 18221.5469 - 121ms/epoch - 3ms/step
Epoch 112/500
37/37 - 0s - loss: 459364416.0000 - mean_absolute_error: 12560.5811 - val_loss:
2032824320.0000 - val_mean_absolute_error: 18388.6211 - 119ms/epoch - 3ms/step
Epoch 113/500
37/37 - 0s - loss: 458531040.0000 - mean_absolute_error: 12593.3994 - val_loss:
2011297408.0000 - val_mean_absolute_error: 18252.0879 - 120ms/epoch - 3ms/step
Epoch 114/500
37/37 - 0s - loss: 458066304.0000 - mean_absolute_error: 12576.5303 - val_loss:
2064084352.0000 - val_mean_absolute_error: 18847.0039 - 117ms/epoch - 3ms/step
Epoch 115/500
37/37 - 0s - loss: 461363040.0000 - mean_absolute_error: 12635.0195 - val_loss:
2022959616.0000 - val_mean_absolute_error: 18338.5625 - 140ms/epoch - 4ms/step
Epoch 116/500
37/37 - 0s - loss: 454234368.0000 - mean_absolute_error: 12547.1514 - val_loss:
2014856704.0000 - val_mean_absolute_error: 18243.9531 - 119ms/epoch - 3ms/step
Epoch 117/500
37/37 - 0s - loss: 451985984.0000 - mean_absolute_error: 12498.3604 - val_loss:
2006177024.0000 - val_mean_absolute_error: 18218.9746 - 119ms/epoch - 3ms/step
Epoch 118/500
37/37 - 0s - loss: 450361280.0000 - mean_absolute_error: 12452.4990 - val_loss:
2011921536.0000 - val_mean_absolute_error: 18186.9238 - 115ms/epoch - 3ms/step
Epoch 119/500
37/37 - 0s - loss: 452324032.0000 - mean_absolute_error: 12469.0029 - val_loss:
2015041024.0000 - val_mean_absolute_error: 18240.0352 - 111ms/epoch - 3ms/step
Epoch 120/500
37/37 - 0s - loss: 448845696.0000 - mean_absolute_error: 12433.6768 - val_loss:
1999945728.0000 - val_mean_absolute_error: 18239.1270 - 115ms/epoch - 3ms/step
Epoch 121/500
37/37 - 0s - loss: 455345408.0000 - mean_absolute_error: 12534.3232 - val_loss:
1994470272.0000 - val_mean_absolute_error: 18150.7324 - 112ms/epoch - 3ms/step
Epoch 122/500
37/37 - 0s - loss: 443909600.0000 - mean_absolute_error: 12360.0996 - val_loss:
2021132032.0000 - val_mean_absolute_error: 18210.6777 - 118ms/epoch - 3ms/step
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Epoch 123/500
37/37 - 0s - loss: 453971520.0000 - mean_absolute_error: 12499.6133 - val_loss:
1988078336.0000 - val_mean_absolute_error: 18308.3516 - 121ms/epoch - 3ms/step
Epoch 124/500
37/37 - 0s - loss: 444679872.0000 - mean_absolute_error: 12378.8184 - val_loss:
2013552768.0000 - val_mean_absolute_error: 18196.3613 - 111ms/epoch - 3ms/step
Epoch 125/500
37/37 - 0s - loss: 441634752.0000 - mean_absolute_error: 12354.6318 - val_loss:
2009077248.0000 - val_mean_absolute_error: 18204.5645 - 110ms/epoch - 3ms/step
Epoch 126/500
37/37 - 0s - loss: 442431328.0000 - mean_absolute_error: 12374.4824 - val_loss:
1999768704.0000 - val_mean_absolute_error: 18181.0430 - 116ms/epoch - 3ms/step
Epoch 127/500
37/37 - 0s - loss: 442404320.0000 - mean_absolute_error: 12364.9199 - val_loss:
1987888000.0000 - val_mean_absolute_error: 18255.3652 - 118ms/epoch - 3ms/step
Epoch 128/500
37/37 - 0s - loss: 438685344.0000 - mean_absolute_error: 12299.1240 - val_loss:
2000800384.0000 - val_mean_absolute_error: 18192.0195 - 114ms/epoch - 3ms/step
Epoch 129/500
37/37 - 0s - loss: 441481664.0000 - mean_absolute_error: 12326.5439 - val_loss:
2024691200.0000 - val_mean_absolute_error: 18367.8047 - 121ms/epoch - 3ms/step
Epoch 130/500
37/37 - 0s - loss: 438791232.0000 - mean_absolute_error: 12412.0195 - val_loss:
2025840256.0000 - val_mean_absolute_error: 18408.4922 - 115ms/epoch - 3ms/step
Epoch 131/500
37/37 - 0s - loss: 437574560.0000 - mean_absolute_error: 12324.9766 - val_loss:
1986451328.0000 - val_mean_absolute_error: 18151.6738 - 114ms/epoch - 3ms/step
Epoch 132/500
37/37 - 0s - loss: 434963552.0000 - mean_absolute_error: 12356.6670 - val_loss:
2007484800.0000 - val_mean_absolute_error: 18347.0137 - 129ms/epoch - 3ms/step
Epoch 133/500
37/37 - 0s - loss: 439912320.0000 - mean_absolute_error: 12468.5615 - val_loss:
1999623168.0000 - val_mean_absolute_error: 18201.7402 - 116ms/epoch - 3ms/step
Epoch 134/500
37/37 - 0s - loss: 430681312.0000 - mean_absolute_error: 12213.2695 - val_loss:
2019718528.0000 - val_mean_absolute_error: 18325.0000 - 109ms/epoch - 3ms/step
Epoch 135/500
37/37 - 0s - loss: 432333664.0000 - mean_absolute_error: 12220.3018 - val_loss:
2049528192.0000 - val_mean_absolute_error: 18665.7363 - 115ms/epoch - 3ms/step
Epoch 136/500
37/37 - 0s - loss: 430643168.0000 - mean_absolute_error: 12328.0264 - val_loss:
2003935104.0000 - val_mean_absolute_error: 18198.6367 - 118ms/epoch - 3ms/step
Epoch 137/500
37/37 - 0s - loss: 430090592.0000 - mean_absolute_error: 12178.9316 - val_loss:
2028278656.0000 - val_mean_absolute_error: 18287.8633 - 169ms/epoch - 5ms/step
Epoch 138/500
37/37 - 0s - loss: 425336512.0000 - mean_absolute_error: 12110.1006 - val_loss:
1997877248.0000 - val_mean_absolute_error: 18162.5918 - 165ms/epoch - 4ms/step
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Epoch 139/500
37/37 - 0s - loss: 427984096.0000 - mean_absolute_error: 12236.5762 - val_loss:
2029212544.0000 - val_mean_absolute_error: 18503.3535 - 223ms/epoch - 6ms/step
Epoch 140/500
37/37 - 0s - loss: 426976672.0000 - mean_absolute_error: 12249.2510 - val_loss:
2009985280.0000 - val_mean_absolute_error: 18212.0488 - 168ms/epoch - 5ms/step
Epoch 141/500
37/37 - 0s - loss: 426498432.0000 - mean_absolute_error: 12159.4561 - val_loss:
2022849920.0000 - val_mean_absolute_error: 18425.3828 - 159ms/epoch - 4ms/step
Epoch 142/500
37/37 - 0s - loss: 423542016.0000 - mean_absolute_error: 12158.9336 - val_loss:
1995341824.0000 - val_mean_absolute_error: 18170.8867 - 160ms/epoch - 4ms/step
Epoch 143/500
37/37 - 0s - loss: 431832896.0000 - mean_absolute_error: 12197.6172 - val_loss:
1976221952.0000 - val_mean_absolute_error: 18095.0215 - 154ms/epoch - 4ms/step
Epoch 144/500
37/37 - 0s - loss: 425167072.0000 - mean_absolute_error: 12227.6768 - val_loss:
1996991616.0000 - val_mean_absolute_error: 18154.1621 - 160ms/epoch - 4ms/step
Epoch 145/500
37/37 - 0s - loss: 420338816.0000 - mean_absolute_error: 12101.4336 - val_loss:
1986540672.0000 - val_mean_absolute_error: 18193.6094 - 212ms/epoch - 6ms/step
Epoch 146/500
37/37 - 0s - loss: 421366880.0000 - mean_absolute_error: 12168.8330 - val_loss:
2013170944.0000 - val_mean_absolute_error: 18326.9473 - 197ms/epoch - 5ms/step
Epoch 147/500
37/37 - 0s - loss: 421379584.0000 - mean_absolute_error: 12174.8838 - val_loss:
2020809984.0000 - val_mean_absolute_error: 18424.4336 - 154ms/epoch - 4ms/step
Epoch 148/500
37/37 - 0s - loss: 414322304.0000 - mean_absolute_error: 12058.8711 - val_loss:
1988201344.0000 - val_mean_absolute_error: 18230.2852 - 195ms/epoch - 5ms/step
Epoch 149/500
37/37 - 0s - loss: 421564448.0000 - mean_absolute_error: 12104.7295 - val_loss:
2030653568.0000 - val_mean_absolute_error: 18387.1211 - 194ms/epoch - 5ms/step
Epoch 150/500
37/37 - 0s - loss: 414461824.0000 - mean_absolute_error: 12059.4131 - val_loss:
2007785856.0000 - val_mean_absolute_error: 18274.6602 - 166ms/epoch - 4ms/step
Epoch 151/500
37/37 - 0s - loss: 413525504.0000 - mean_absolute_error: 11987.8311 - val_loss:
2010503040.0000 - val_mean_absolute_error: 18369.7129 - 222ms/epoch - 6ms/step
Epoch 152/500
37/37 - 0s - loss: 412957248.0000 - mean_absolute_error: 12007.7881 - val_loss:
2001591552.0000 - val_mean_absolute_error: 18149.2285 - 150ms/epoch - 4ms/step
Epoch 153/500
37/37 - 0s - loss: 410627136.0000 - mean_absolute_error: 11935.2549 - val_loss:
2000825984.0000 - val_mean_absolute_error: 18200.3398 - 205ms/epoch - 6ms/step
Epoch 154/500
37/37 - 0s - loss: 410805088.0000 - mean_absolute_error: 11962.3857 - val_loss:
2005059328.0000 - val_mean_absolute_error: 18276.9199 - 118ms/epoch - 3ms/step
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Epoch 155/500
37/37 - 0s - loss: 412903744.0000 - mean_absolute_error: 11976.7900 - val_loss:
2004449024.0000 - val_mean_absolute_error: 18191.2676 - 109ms/epoch - 3ms/step
Epoch 156/500
37/37 - 0s - loss: 411344544.0000 - mean_absolute_error: 11962.0449 - val_loss:
1980532992.0000 - val_mean_absolute_error: 18111.6426 - 116ms/epoch - 3ms/step
Epoch 157/500
37/37 - 0s - loss: 410113408.0000 - mean_absolute_error: 11953.0771 - val_loss:
1987379840.0000 - val_mean_absolute_error: 18172.6523 - 104ms/epoch - 3ms/step
Epoch 158/500
37/37 - 0s - loss: 407615776.0000 - mean_absolute_error: 11905.6006 - val_loss:
1982894208.0000 - val_mean_absolute_error: 18146.2539 - 115ms/epoch - 3ms/step
Epoch 159/500
37/37 - 0s - loss: 411551072.0000 - mean_absolute_error: 12026.4199 - val_loss:
1991243392.0000 - val_mean_absolute_error: 18196.2715 - 111ms/epoch - 3ms/step
Epoch 160/500
37/37 - 0s - loss: 411286688.0000 - mean_absolute_error: 12003.2588 - val_loss:
1989714688.0000 - val_mean_absolute_error: 18202.2422 - 114ms/epoch - 3ms/step
Epoch 161/500
37/37 - 0s - loss: 406011392.0000 - mean_absolute_error: 11936.7832 - val_loss:
1986876416.0000 - val_mean_absolute_error: 18151.1348 - 106ms/epoch - 3ms/step
Epoch 162/500
37/37 - 0s - loss: 404160064.0000 - mean_absolute_error: 11919.8164 - val_loss:
1993749248.0000 - val_mean_absolute_error: 18172.5586 - 111ms/epoch - 3ms/step
Epoch 163/500
37/37 - 0s - loss: 406402272.0000 - mean_absolute_error: 12053.0127 - val_loss:
1976906624.0000 - val_mean_absolute_error: 18284.4824 - 108ms/epoch - 3ms/step
Epoch 164/500
37/37 - 0s - loss: 400669952.0000 - mean_absolute_error: 11879.6914 - val_loss:
1983667200.0000 - val_mean_absolute_error: 18290.1289 - 110ms/epoch - 3ms/step
Epoch 165/500
37/37 - 0s - loss: 400465856.0000 - mean_absolute_error: 11836.1768 - val_loss:
1988026240.0000 - val_mean_absolute_error: 18339.6094 - 112ms/epoch - 3ms/step
Epoch 166/500
37/37 - 0s - loss: 403244128.0000 - mean_absolute_error: 11930.7607 - val_loss:
1987215360.0000 - val_mean_absolute_error: 18258.9180 - 109ms/epoch - 3ms/step
Epoch 167/500
37/37 - 0s - loss: 402460480.0000 - mean_absolute_error: 11872.1270 - val_loss:
1991876224.0000 - val_mean_absolute_error: 18224.7930 - 115ms/epoch - 3ms/step
Epoch 168/500
37/37 - 0s - loss: 403108384.0000 - mean_absolute_error: 11890.9551 - val_loss:
1994882176.0000 - val_mean_absolute_error: 18243.2773 - 104ms/epoch - 3ms/step
Epoch 169/500
37/37 - 0s - loss: 398296640.0000 - mean_absolute_error: 11860.9062 - val_loss:
1973633920.0000 - val_mean_absolute_error: 18234.0215 - 104ms/epoch - 3ms/step
Epoch 170/500
37/37 - 0s - loss: 399247072.0000 - mean_absolute_error: 11975.9287 - val_loss:
1982680192.0000 - val_mean_absolute_error: 18242.0117 - 106ms/epoch - 3ms/step
```

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Epoch 171/500
37/37 - 0s - loss: 393250336.0000 - mean_absolute_error: 11767.9375 - val_loss:
1978364800.0000 - val_mean_absolute_error: 18200.7598 - 111ms/epoch - 3ms/step
Epoch 172/500
37/37 - 0s - loss: 392886976.0000 - mean_absolute_error: 11749.0049 - val_loss:
1985856384.0000 - val_mean_absolute_error: 18244.3477 - 111ms/epoch - 3ms/step
Epoch 173/500
37/37 - 0s - loss: 396274752.0000 - mean_absolute_error: 11804.0205 - val_loss:
1981505152.0000 - val_mean_absolute_error: 18216.9355 - 106ms/epoch - 3ms/step
Epoch 174/500
37/37 - 0s - loss: 392948928.0000 - mean_absolute_error: 11716.4141 - val_loss:
1989536512.0000 - val_mean_absolute_error: 18213.8555 - 111ms/epoch - 3ms/step
Epoch 175/500
37/37 - 0s - loss: 391234272.0000 - mean_absolute_error: 11707.2695 - val_loss:
1999842048.0000 - val_mean_absolute_error: 18426.7852 - 109ms/epoch - 3ms/step
Epoch 176/500
37/37 - 0s - loss: 393681888.0000 - mean_absolute_error: 11777.9014 - val_loss:
2007222912.0000 - val_mean_absolute_error: 18438.9453 - 122ms/epoch - 3ms/step
Epoch 177/500
37/37 - 0s - loss: 388493856.0000 - mean_absolute_error: 11725.6230 - val_loss:
1989026560.0000 - val_mean_absolute_error: 18273.8730 - 104ms/epoch - 3ms/step
Epoch 178/500
37/37 - 0s - loss: 387634368.0000 - mean_absolute_error: 11663.7461 - val_loss:
1988032256.0000 - val_mean_absolute_error: 18275.3379 - 110ms/epoch - 3ms/step
Epoch 179/500
37/37 - 0s - loss: 388348384.0000 - mean_absolute_error: 11745.6426 - val_loss:
1987510784.0000 - val_mean_absolute_error: 18219.8125 - 103ms/epoch - 3ms/step
Epoch 180/500
37/37 - 0s - loss: 390213056.0000 - mean_absolute_error: 11765.0000 - val_loss:
1992988160.0000 - val_mean_absolute_error: 18325.2480 - 103ms/epoch - 3ms/step
Epoch 181/500
37/37 - 0s - loss: 385601664.0000 - mean_absolute_error: 11660.5605 - val_loss:
1975879040.0000 - val_mean_absolute_error: 18221.7070 - 110ms/epoch - 3ms/step
Epoch 182/500
37/37 - 0s - loss: 386847584.0000 - mean_absolute_error: 11613.3818 - val_loss:
2002526976.0000 - val_mean_absolute_error: 18376.8398 - 111ms/epoch - 3ms/step
Epoch 183/500
37/37 - 0s - loss: 385722176.0000 - mean_absolute_error: 11691.5840 - val_loss:
2003759360.0000 - val_mean_absolute_error: 18457.6230 - 111ms/epoch - 3ms/step
Epoch 184/500
37/37 - 0s - loss: 382126912.0000 - mean_absolute_error: 11576.7500 - val_loss:
2001749376.0000 - val_mean_absolute_error: 18397.6914 - 103ms/epoch - 3ms/step
Epoch 185/500
37/37 - 0s - loss: 383682496.0000 - mean_absolute_error: 11652.8643 - val_loss:
1998269184.0000 - val_mean_absolute_error: 18420.0898 - 114ms/epoch - 3ms/step
Epoch 186/500
37/37 - 0s - loss: 382968704.0000 - mean_absolute_error: 11694.7549 - val_loss:
1967802112.0000 - val_mean_absolute_error: 18237.9258 - 111ms/epoch - 3ms/step
```

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Epoch 187/500
37/37 - 0s - loss: 383505152.0000 - mean_absolute_error: 11708.4082 - val_loss:
1990969984.0000 - val_mean_absolute_error: 18260.5781 - 108ms/epoch - 3ms/step
Epoch 188/500
37/37 - 0s - loss: 381837088.0000 - mean_absolute_error: 11629.6836 - val_loss:
1971461120.0000 - val_mean_absolute_error: 18270.3867 - 112ms/epoch - 3ms/step
Epoch 189/500
37/37 - 0s - loss: 383511328.0000 - mean_absolute_error: 11585.7148 - val_loss:
1978260736.0000 - val_mean_absolute_error: 18292.9219 - 113ms/epoch - 3ms/step
Epoch 190/500
37/37 - 0s - loss: 380534912.0000 - mean_absolute_error: 11706.2246 - val_loss:
1999706880.0000 - val_mean_absolute_error: 18451.7402 - 111ms/epoch - 3ms/step
Epoch 191/500
37/37 - 0s - loss: 376947136.0000 - mean_absolute_error: 11589.1748 - val_loss:
1995158016.0000 - val_mean_absolute_error: 18395.3125 - 113ms/epoch - 3ms/step
Epoch 192/500
37/37 - 0s - loss: 376180448.0000 - mean_absolute_error: 11584.2500 - val_loss:
1990731008.0000 - val_mean_absolute_error: 18370.0898 - 111ms/epoch - 3ms/step
Epoch 193/500
37/37 - 0s - loss: 377512640.0000 - mean_absolute_error: 11652.1562 - val_loss:
1990841600.0000 - val_mean_absolute_error: 18392.6777 - 102ms/epoch - 3ms/step
Epoch 194/500
37/37 - 0s - loss: 377346560.0000 - mean_absolute_error: 11604.7578 - val_loss:
1981430656.0000 - val_mean_absolute_error: 18321.4551 - 123ms/epoch - 3ms/step
Epoch 195/500
37/37 - 0s - loss: 380455840.0000 - mean_absolute_error: 11604.0732 - val_loss:
1989888384.0000 - val_mean_absolute_error: 18353.8066 - 108ms/epoch - 3ms/step
Epoch 196/500
37/37 - 0s - loss: 384498976.0000 - mean_absolute_error: 11834.9512 - val_loss:
2006056064.0000 - val_mean_absolute_error: 18588.2109 - 108ms/epoch - 3ms/step
Epoch 197/500
37/37 - 0s - loss: 371302080.0000 - mean_absolute_error: 11561.0537 - val_loss:
1975342848.0000 - val_mean_absolute_error: 18216.8594 - 112ms/epoch - 3ms/step
Epoch 198/500
37/37 - 0s - loss: 372181984.0000 - mean_absolute_error: 11617.9482 - val_loss:
1969291776.0000 - val_mean_absolute_error: 18294.6055 - 106ms/epoch - 3ms/step
Epoch 199/500
37/37 - 0s - loss: 374595360.0000 - mean_absolute_error: 11612.4199 - val_loss:
1969946112.0000 - val_mean_absolute_error: 18189.7617 - 112ms/epoch - 3ms/step
Epoch 200/500
37/37 - 0s - loss: 372084544.0000 - mean_absolute_error: 11488.4873 - val_loss:
1985985152.0000 - val_mean_absolute_error: 18455.3008 - 105ms/epoch - 3ms/step
Epoch 201/500
37/37 - 0s - loss: 376587808.0000 - mean_absolute_error: 11651.0869 - val_loss:
1974646784.0000 - val_mean_absolute_error: 18250.5742 - 112ms/epoch - 3ms/step
Epoch 202/500
37/37 - 0s - loss: 368149216.0000 - mean_absolute_error: 11458.9424 - val_loss:
1980468992.0000 - val_mean_absolute_error: 18280.8711 - 108ms/epoch - 3ms/step
```

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Epoch 203/500
37/37 - 0s - loss: 367175648.0000 - mean_absolute_error: 11474.6523 - val_loss:
1990484352.0000 - val_mean_absolute_error: 18307.8340 - 112ms/epoch - 3ms/step
Epoch 204/500
37/37 - 0s - loss: 367188544.0000 - mean_absolute_error: 11433.1455 - val_loss:
1976742400.0000 - val_mean_absolute_error: 18299.3906 - 112ms/epoch - 3ms/step
Epoch 205/500
37/37 - 0s - loss: 365921408.0000 - mean_absolute_error: 11441.7773 - val_loss:
1974560896.0000 - val_mean_absolute_error: 18308.3965 - 112ms/epoch - 3ms/step
Epoch 206/500
37/37 - 0s - loss: 372432032.0000 - mean_absolute_error: 11620.8018 - val_loss:
1991870720.0000 - val_mean_absolute_error: 18366.9238 - 111ms/epoch - 3ms/step
Epoch 207/500
37/37 - 0s - loss: 363396544.0000 - mean_absolute_error: 11419.5312 - val_loss:
1991798656.0000 - val_mean_absolute_error: 18340.2793 - 112ms/epoch - 3ms/step
Epoch 208/500
37/37 - 0s - loss: 363241696.0000 - mean_absolute_error: 11510.8232 - val_loss:
2005797248.0000 - val_mean_absolute_error: 18598.7070 - 115ms/epoch - 3ms/step
Epoch 209/500
37/37 - 0s - loss: 362628480.0000 - mean_absolute_error: 11494.9160 - val_loss:
1989926784.0000 - val_mean_absolute_error: 18334.3418 - 111ms/epoch - 3ms/step
Epoch 210/500
37/37 - 0s - loss: 362779424.0000 - mean_absolute_error: 11406.0898 - val_loss:
2004243456.0000 - val_mean_absolute_error: 18438.4512 - 105ms/epoch - 3ms/step
Epoch 211/500
37/37 - 0s - loss: 360546528.0000 - mean_absolute_error: 11382.6699 - val_loss:
1989196288.0000 - val_mean_absolute_error: 18443.0391 - 107ms/epoch - 3ms/step
Epoch 212/500
37/37 - 0s - loss: 361183328.0000 - mean_absolute_error: 11439.6357 - val_loss:
1993503616.0000 - val_mean_absolute_error: 18404.7539 - 120ms/epoch - 3ms/step
Epoch 213/500
37/37 - 0s - loss: 358301504.0000 - mean_absolute_error: 11392.2393 - val_loss:
1976891008.0000 - val_mean_absolute_error: 18295.5762 - 113ms/epoch - 3ms/step
Epoch 214/500
37/37 - 0s - loss: 360949376.0000 - mean_absolute_error: 11415.1494 - val_loss:
1998907520.0000 - val_mean_absolute_error: 18601.6602 - 115ms/epoch - 3ms/step
Epoch 215/500
37/37 - 0s - loss: 362007264.0000 - mean_absolute_error: 11560.4609 - val_loss:
2007033728.0000 - val_mean_absolute_error: 18650.4355 - 113ms/epoch - 3ms/step
Epoch 216/500
37/37 - 0s - loss: 357359744.0000 - mean_absolute_error: 11369.4688 - val_loss:
1984217088.0000 - val_mean_absolute_error: 18337.9785 - 111ms/epoch - 3ms/step
Epoch 217/500
37/37 - 0s - loss: 355547456.0000 - mean_absolute_error: 11323.1416 - val_loss:
1990986624.0000 - val_mean_absolute_error: 18420.3008 - 107ms/epoch - 3ms/step
Epoch 218/500
37/37 - 0s - loss: 354291424.0000 - mean_absolute_error: 11321.6934 - val_loss:
1981228288.0000 - val_mean_absolute_error: 18350.4707 - 111ms/epoch - 3ms/step
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Epoch 219/500
37/37 - 0s - loss: 355333472.0000 - mean_absolute_error: 11467.2119 - val_loss:
1991447424.0000 - val_mean_absolute_error: 18474.6953 - 107ms/epoch - 3ms/step
Epoch 220/500
37/37 - 0s - loss: 351969536.0000 - mean_absolute_error: 11278.2773 - val_loss:
1968431232.0000 - val_mean_absolute_error: 18267.5176 - 114ms/epoch - 3ms/step
Epoch 221/500
37/37 - 0s - loss: 352767168.0000 - mean_absolute_error: 11350.0801 - val_loss:
1985437312.0000 - val_mean_absolute_error: 18326.5312 - 125ms/epoch - 3ms/step
Epoch 222/500
37/37 - 0s - loss: 354058496.0000 - mean_absolute_error: 11326.8486 - val_loss:
1972557696.0000 - val_mean_absolute_error: 18311.4316 - 113ms/epoch - 3ms/step
Epoch 223/500
37/37 - 0s - loss: 356832928.0000 - mean_absolute_error: 11481.1914 - val_loss:
1968506240.0000 - val_mean_absolute_error: 18568.1660 - 110ms/epoch - 3ms/step
Epoch 224/500
37/37 - 0s - loss: 358077504.0000 - mean_absolute_error: 11584.1699 - val_loss:
1962937856.0000 - val_mean_absolute_error: 18372.5215 - 119ms/epoch - 3ms/step
Epoch 225/500
37/37 - 0s - loss: 351630784.0000 - mean_absolute_error: 11374.0869 - val_loss:
1973070592.0000 - val_mean_absolute_error: 18347.4590 - 111ms/epoch - 3ms/step
Epoch 226/500
37/37 - 0s - loss: 348839744.0000 - mean_absolute_error: 11277.0166 - val_loss:
1981666816.0000 - val_mean_absolute_error: 18419.5879 - 110ms/epoch - 3ms/step
Epoch 227/500
37/37 - 0s - loss: 349357280.0000 - mean_absolute_error: 11255.7295 - val_loss:
1967646848.0000 - val_mean_absolute_error: 18285.3926 - 112ms/epoch - 3ms/step
Epoch 228/500
37/37 - 0s - loss: 352152576.0000 - mean_absolute_error: 11337.9932 - val_loss:
1974744192.0000 - val_mean_absolute_error: 18386.2910 - 118ms/epoch - 3ms/step
Epoch 229/500
37/37 - 0s - loss: 347225024.0000 - mean_absolute_error: 11283.9082 - val_loss:
1975240704.0000 - val_mean_absolute_error: 18372.8887 - 115ms/epoch - 3ms/step
Epoch 230/500
37/37 - 0s - loss: 353645952.0000 - mean_absolute_error: 11457.5059 - val_loss:
1971899648.0000 - val_mean_absolute_error: 18303.3633 - 111ms/epoch - 3ms/step
Epoch 231/500
37/37 - 0s - loss: 348182816.0000 - mean_absolute_error: 11277.5723 - val_loss:
1970985600.0000 - val_mean_absolute_error: 18331.3125 - 106ms/epoch - 3ms/step
Epoch 232/500
37/37 - 0s - loss: 345833568.0000 - mean_absolute_error: 11332.1553 - val_loss:
1986857216.0000 - val_mean_absolute_error: 18367.9648 - 117ms/epoch - 3ms/step
Epoch 233/500
37/37 - 0s - loss: 342808416.0000 - mean_absolute_error: 11178.5605 - val_loss:
1990298752.0000 - val_mean_absolute_error: 18478.7969 - 111ms/epoch - 3ms/step
Epoch 234/500
37/37 - 0s - loss: 344027200.0000 - mean_absolute_error: 11239.6572 - val_loss:
1978089472.0000 - val_mean_absolute_error: 18382.8750 - 109ms/epoch - 3ms/step
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Epoch 235/500
37/37 - 0s - loss: 342345120.0000 - mean_absolute_error: 11167.4951 - val_loss:
1986762240.0000 - val_mean_absolute_error: 18341.5215 - 108ms/epoch - 3ms/step
Epoch 236/500
37/37 - 0s - loss: 341661088.0000 - mean_absolute_error: 11166.2910 - val_loss:
1975004800.0000 - val_mean_absolute_error: 18352.3867 - 103ms/epoch - 3ms/step
Epoch 237/500
37/37 - 0s - loss: 342105536.0000 - mean_absolute_error: 11303.3623 - val_loss:
1992617600.0000 - val_mean_absolute_error: 18490.1152 - 112ms/epoch - 3ms/step
Epoch 238/500
37/37 - 0s - loss: 345098112.0000 - mean_absolute_error: 11302.5381 - val_loss:
2010446080.0000 - val_mean_absolute_error: 18697.2754 - 105ms/epoch - 3ms/step
Epoch 239/500
37/37 - 0s - loss: 340502304.0000 - mean_absolute_error: 11144.1562 - val_loss:
1997343616.0000 - val_mean_absolute_error: 18553.7734 - 122ms/epoch - 3ms/step
Epoch 240/500
37/37 - 0s - loss: 338636512.0000 - mean_absolute_error: 11122.0830 - val_loss:
1978716544.0000 - val_mean_absolute_error: 18406.7207 - 108ms/epoch - 3ms/step
Epoch 241/500
37/37 - 0s - loss: 336203328.0000 - mean_absolute_error: 11098.5449 - val_loss:
1978930048.0000 - val_mean_absolute_error: 18347.8125 - 177ms/epoch - 5ms/step
Epoch 242/500
37/37 - 0s - loss: 345387072.0000 - mean_absolute_error: 11249.1064 - val_loss:
1957706624.0000 - val_mean_absolute_error: 18273.6387 - 193ms/epoch - 5ms/step
Epoch 243/500
37/37 - 0s - loss: 344361088.0000 - mean_absolute_error: 11462.3809 - val_loss:
1973143936.0000 - val_mean_absolute_error: 18312.9316 - 147ms/epoch - 4ms/step
Epoch 244/500
37/37 - 0s - loss: 336137920.0000 - mean_absolute_error: 11115.7568 - val_loss:
1976478464.0000 - val_mean_absolute_error: 18401.1992 - 148ms/epoch - 4ms/step
Epoch 245/500
37/37 - 0s - loss: 336914144.0000 - mean_absolute_error: 11139.1787 - val_loss:
1968347264.0000 - val_mean_absolute_error: 18278.7422 - 170ms/epoch - 5ms/step
Epoch 246/500
37/37 - 0s - loss: 334114272.0000 - mean_absolute_error: 11107.8447 - val_loss:
1982878976.0000 - val_mean_absolute_error: 18448.1406 - 193ms/epoch - 5ms/step
Epoch 247/500
37/37 - 0s - loss: 335054272.0000 - mean_absolute_error: 11107.5459 - val_loss:
1978914688.0000 - val_mean_absolute_error: 18355.2852 - 190ms/epoch - 5ms/step
Epoch 248/500
37/37 - 0s - loss: 331179904.0000 - mean_absolute_error: 11023.1846 - val_loss:
1988414976.0000 - val_mean_absolute_error: 18384.8066 - 148ms/epoch - 4ms/step
Epoch 249/500
37/37 - 0s - loss: 335133632.0000 - mean_absolute_error: 11064.3506 - val_loss:
1992779008.0000 - val_mean_absolute_error: 18461.9160 - 151ms/epoch - 4ms/step
Epoch 250/500
37/37 - 0s - loss: 332853088.0000 - mean_absolute_error: 11127.8135 - val_loss:
1979281280.0000 - val_mean_absolute_error: 18432.9531 - 191ms/epoch - 5ms/step
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Epoch 251/500
37/37 - 0s - loss: 330939840.0000 - mean_absolute_error: 10979.3584 - val_loss:
1980434176.0000 - val_mean_absolute_error: 18427.7422 - 208ms/epoch - 6ms/step
Epoch 252/500
37/37 - 0s - loss: 337661984.0000 - mean_absolute_error: 11157.2529 - val_loss:
2016915712.0000 - val_mean_absolute_error: 18918.8535 - 195ms/epoch - 5ms/step
Epoch 253/500
37/37 - 0s - loss: 329009504.0000 - mean_absolute_error: 11069.1074 - val_loss:
1972583552.0000 - val_mean_absolute_error: 18361.5371 - 157ms/epoch - 4ms/step
Epoch 254/500
37/37 - 0s - loss: 325292320.0000 - mean_absolute_error: 10950.3945 - val_loss:
1976921728.0000 - val_mean_absolute_error: 18370.2051 - 152ms/epoch - 4ms/step
Epoch 255/500
37/37 - 0s - loss: 326954656.0000 - mean_absolute_error: 10955.8613 - val_loss:
1964386816.0000 - val_mean_absolute_error: 18299.9062 - 222ms/epoch - 6ms/step
Epoch 256/500
37/37 - 0s - loss: 324878304.0000 - mean_absolute_error: 10948.7393 - val_loss:
1979093120.0000 - val_mean_absolute_error: 18409.5820 - 157ms/epoch - 4ms/step
Epoch 257/500
37/37 - 0s - loss: 322187552.0000 - mean_absolute_error: 10931.6045 - val_loss:
1968516480.0000 - val_mean_absolute_error: 18356.3965 - 176ms/epoch - 5ms/step
Epoch 258/500
37/37 - 0s - loss: 326040928.0000 - mean_absolute_error: 10979.9717 - val_loss:
1978279808.0000 - val_mean_absolute_error: 18385.7148 - 158ms/epoch - 4ms/step
Epoch 259/500
37/37 - 0s - loss: 321518464.0000 - mean_absolute_error: 10928.3877 - val_loss:
1987451520.0000 - val_mean_absolute_error: 18399.1074 - 127ms/epoch - 3ms/step
Epoch 260/500
37/37 - 0s - loss: 323569664.0000 - mean_absolute_error: 10899.2275 - val_loss:
1970330240.0000 - val_mean_absolute_error: 18419.1270 - 110ms/epoch - 3ms/step
Epoch 261/500
37/37 - 0s - loss: 319150656.0000 - mean_absolute_error: 10864.4893 - val_loss:
1992004864.0000 - val_mean_absolute_error: 18574.5098 - 106ms/epoch - 3ms/step
Epoch 262/500
37/37 - 0s - loss: 318746400.0000 - mean_absolute_error: 10868.0361 - val_loss:
1971044992.0000 - val_mean_absolute_error: 18354.4922 - 108ms/epoch - 3ms/step
Epoch 263/500
37/37 - 0s - loss: 320647488.0000 - mean_absolute_error: 10921.6475 - val_loss:
1968303744.0000 - val_mean_absolute_error: 18348.6035 - 107ms/epoch - 3ms/step
Epoch 264/500
37/37 - 0s - loss: 320636288.0000 - mean_absolute_error: 10943.0146 - val_loss:
1980134272.0000 - val_mean_absolute_error: 18420.9727 - 108ms/epoch - 3ms/step
Epoch 265/500
37/37 - 0s - loss: 316203648.0000 - mean_absolute_error: 10805.6455 - val_loss:
1957901184.0000 - val_mean_absolute_error: 18283.1328 - 125ms/epoch - 3ms/step
Epoch 266/500
37/37 - 0s - loss: 318533120.0000 - mean_absolute_error: 10848.5752 - val_loss:
1965531520.0000 - val_mean_absolute_error: 18330.9492 - 118ms/epoch - 3ms/step
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Epoch 267/500
37/37 - 0s - loss: 317237376.0000 - mean_absolute_error: 10919.3457 - val_loss:
1976619392.0000 - val_mean_absolute_error: 18383.9609 - 120ms/epoch - 3ms/step
Epoch 268/500
37/37 - 0s - loss: 315431872.0000 - mean_absolute_error: 10906.2217 - val_loss:
1977316992.0000 - val_mean_absolute_error: 18455.5645 - 112ms/epoch - 3ms/step
Epoch 269/500
37/37 - 0s - loss: 319520192.0000 - mean_absolute_error: 10925.3643 - val_loss:
2015892736.0000 - val_mean_absolute_error: 18705.0898 - 151ms/epoch - 4ms/step
Epoch 270/500
37/37 - 0s - loss: 318017184.0000 - mean_absolute_error: 10990.0049 - val_loss:
1989889280.0000 - val_mean_absolute_error: 18593.7852 - 215ms/epoch - 6ms/step
Epoch 271/500
37/37 - 0s - loss: 316734432.0000 - mean_absolute_error: 11039.9785 - val_loss:
1988673280.0000 - val_mean_absolute_error: 18542.1016 - 231ms/epoch - 6ms/step
Epoch 272/500
37/37 - 0s - loss: 310562720.0000 - mean_absolute_error: 10727.4980 - val_loss:
1974848384.0000 - val_mean_absolute_error: 18397.5742 - 216ms/epoch - 6ms/step
Epoch 273/500
37/37 - 0s - loss: 310125152.0000 - mean_absolute_error: 10770.1074 - val_loss:
1992990848.0000 - val_mean_absolute_error: 18413.5781 - 222ms/epoch - 6ms/step
Epoch 274/500
37/37 - 0s - loss: 308558784.0000 - mean_absolute_error: 10670.3359 - val_loss:
1971602304.0000 - val_mean_absolute_error: 18336.2891 - 162ms/epoch - 4ms/step
Epoch 275/500
37/37 - 0s - loss: 310029344.0000 - mean_absolute_error: 10802.3037 - val_loss:
1961438592.0000 - val_mean_absolute_error: 18295.8633 - 174ms/epoch - 5ms/step
Epoch 276/500
37/37 - 0s - loss: 320945312.0000 - mean_absolute_error: 11255.0439 - val_loss:
1972814464.0000 - val_mean_absolute_error: 18671.0000 - 205ms/epoch - 6ms/step
Epoch 277/500
37/37 - 0s - loss: 329215392.0000 - mean_absolute_error: 11387.8711 - val_loss:
1958468224.0000 - val_mean_absolute_error: 18471.0625 - 240ms/epoch - 6ms/step
Epoch 278/500
37/37 - 0s - loss: 307308160.0000 - mean_absolute_error: 10791.9463 - val_loss:
1987901696.0000 - val_mean_absolute_error: 18682.2715 - 187ms/epoch - 5ms/step
Epoch 279/500
37/37 - 0s - loss: 309715616.0000 - mean_absolute_error: 10790.8389 - val_loss:
1959475456.0000 - val_mean_absolute_error: 18337.3398 - 172ms/epoch - 5ms/step
Epoch 280/500
37/37 - 0s - loss: 303149472.0000 - mean_absolute_error: 10675.0566 - val_loss:
1966409728.0000 - val_mean_absolute_error: 18391.1504 - 212ms/epoch - 6ms/step
Epoch 281/500
37/37 - 0s - loss: 302187520.0000 - mean_absolute_error: 10671.7900 - val_loss:
1965548928.0000 - val_mean_absolute_error: 18397.2168 - 192ms/epoch - 5ms/step
Epoch 282/500
37/37 - 0s - loss: 301066592.0000 - mean_absolute_error: 10646.7461 - val_loss:
1954197120.0000 - val_mean_absolute_error: 18331.9082 - 165ms/epoch - 4ms/step
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Epoch 283/500
37/37 - 0s - loss: 301083552.0000 - mean_absolute_error: 10648.5801 - val_loss:
1957372928.0000 - val_mean_absolute_error: 18345.1465 - 211ms/epoch - 6ms/step
Epoch 284/500
37/37 - 0s - loss: 300855808.0000 - mean_absolute_error: 10694.5176 - val_loss:
1976923904.0000 - val_mean_absolute_error: 18488.5566 - 168ms/epoch - 5ms/step
Epoch 285/500
37/37 - 0s - loss: 303160000.0000 - mean_absolute_error: 10762.6514 - val_loss:
1985413120.0000 - val_mean_absolute_error: 18525.2051 - 197ms/epoch - 5ms/step
Epoch 286/500
37/37 - 0s - loss: 301137248.0000 - mean_absolute_error: 10694.4482 - val_loss:
1978020096.0000 - val_mean_absolute_error: 18472.1055 - 206ms/epoch - 6ms/step
Epoch 287/500
37/37 - 0s - loss: 295959264.0000 - mean_absolute_error: 10597.6699 - val_loss:
1979765120.0000 - val_mean_absolute_error: 18477.4727 - 184ms/epoch - 5ms/step
Epoch 288/500
37/37 - 0s - loss: 299089984.0000 - mean_absolute_error: 10648.3545 - val_loss:
1984641024.0000 - val_mean_absolute_error: 18489.0918 - 203ms/epoch - 5ms/step
Epoch 289/500
37/37 - 0s - loss: 298245760.0000 - mean_absolute_error: 10666.9854 - val_loss:
1960115584.0000 - val_mean_absolute_error: 18307.8730 - 161ms/epoch - 4ms/step
Epoch 290/500
37/37 - 0s - loss: 298819936.0000 - mean_absolute_error: 10619.7803 - val_loss:
1962846464.0000 - val_mean_absolute_error: 18445.5938 - 207ms/epoch - 6ms/step
Epoch 291/500
37/37 - 0s - loss: 294969920.0000 - mean_absolute_error: 10551.9873 - val_loss:
1994754688.0000 - val_mean_absolute_error: 18626.9551 - 210ms/epoch - 6ms/step
Epoch 292/500
37/37 - 0s - loss: 298730432.0000 - mean_absolute_error: 10684.5283 - val_loss:
2002534656.0000 - val_mean_absolute_error: 18835.7910 - 122ms/epoch - 3ms/step
Epoch 293/500
37/37 - 0s - loss: 296598976.0000 - mean_absolute_error: 10661.4326 - val_loss:
1983100928.0000 - val_mean_absolute_error: 18543.3828 - 108ms/epoch - 3ms/step
Epoch 294/500
37/37 - 0s - loss: 295181504.0000 - mean_absolute_error: 10693.4590 - val_loss:
1993040000.0000 - val_mean_absolute_error: 18698.0137 - 112ms/epoch - 3ms/step
Epoch 295/500
37/37 - 0s - loss: 298947488.0000 - mean_absolute_error: 10746.9551 - val_loss:
2011964416.0000 - val_mean_absolute_error: 18852.3164 - 111ms/epoch - 3ms/step
Epoch 296/500
37/37 - 0s - loss: 292497184.0000 - mean_absolute_error: 10554.9736 - val_loss:
1999350912.0000 - val_mean_absolute_error: 18735.0137 - 114ms/epoch - 3ms/step
Epoch 297/500
37/37 - 0s - loss: 291976704.0000 - mean_absolute_error: 10617.5078 - val_loss:
1970255872.0000 - val_mean_absolute_error: 18343.9199 - 103ms/epoch - 3ms/step
Epoch 298/500
37/37 - 0s - loss: 288992256.0000 - mean_absolute_error: 10493.3535 - val_loss:
1975385856.0000 - val_mean_absolute_error: 18458.0078 - 110ms/epoch - 3ms/step
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Epoch 299/500
37/37 - 0s - loss: 285382816.0000 - mean_absolute_error: 10466.6631 - val_loss:
1959214208.0000 - val_mean_absolute_error: 18332.9160 - 115ms/epoch - 3ms/step
Epoch 300/500
37/37 - 0s - loss: 286643424.0000 - mean_absolute_error: 10491.2539 - val_loss:
1967702912.0000 - val_mean_absolute_error: 18396.5215 - 110ms/epoch - 3ms/step
Epoch 301/500
37/37 - 0s - loss: 285087264.0000 - mean_absolute_error: 10450.9131 - val_loss:
1965970048.0000 - val_mean_absolute_error: 18344.7383 - 126ms/epoch - 3ms/step
Epoch 302/500
37/37 - 0s - loss: 284804960.0000 - mean_absolute_error: 10419.3633 - val_loss:
1975190656.0000 - val_mean_absolute_error: 18516.8398 - 101ms/epoch - 3ms/step
Epoch 303/500
37/37 - 0s - loss: 283153376.0000 - mean_absolute_error: 10432.2402 - val_loss:
1959083392.0000 - val_mean_absolute_error: 18346.1055 - 106ms/epoch - 3ms/step
Epoch 304/500
37/37 - 0s - loss: 284363936.0000 - mean_absolute_error: 10437.8789 - val_loss:
1964010240.0000 - val_mean_absolute_error: 18315.2012 - 109ms/epoch - 3ms/step
Epoch 305/500
37/37 - 0s - loss: 282010752.0000 - mean_absolute_error: 10386.4385 - val_loss:
1960312832.0000 - val_mean_absolute_error: 18337.8301 - 114ms/epoch - 3ms/step
Epoch 306/500
37/37 - 0s - loss: 282068864.0000 - mean_absolute_error: 10372.3525 - val_loss:
1979415040.0000 - val_mean_absolute_error: 18483.4492 - 104ms/epoch - 3ms/step
Epoch 307/500
37/37 - 0s - loss: 282438272.0000 - mean_absolute_error: 10405.8496 - val_loss:
1985531136.0000 - val_mean_absolute_error: 18556.5000 - 108ms/epoch - 3ms/step
Epoch 308/500
37/37 - 0s - loss: 280549568.0000 - mean_absolute_error: 10348.1523 - val_loss:
1968826240.0000 - val_mean_absolute_error: 18361.8691 - 115ms/epoch - 3ms/step
Epoch 309/500
37/37 - 0s - loss: 279347488.0000 - mean_absolute_error: 10323.0752 - val_loss:
1974007808.0000 - val_mean_absolute_error: 18401.4863 - 112ms/epoch - 3ms/step
Epoch 310/500
37/37 - 0s - loss: 278909728.0000 - mean_absolute_error: 10360.2197 - val_loss:
2003811712.0000 - val_mean_absolute_error: 18732.3887 - 122ms/epoch - 3ms/step
Epoch 311/500
37/37 - 0s - loss: 277076928.0000 - mean_absolute_error: 10344.3643 - val_loss:
1970765184.0000 - val_mean_absolute_error: 18383.7031 - 109ms/epoch - 3ms/step
Epoch 312/500
37/37 - 0s - loss: 281485920.0000 - mean_absolute_error: 10486.0811 - val_loss:
1964475904.0000 - val_mean_absolute_error: 18433.4336 - 105ms/epoch - 3ms/step
Epoch 313/500
37/37 - 0s - loss: 276273440.0000 - mean_absolute_error: 10305.4092 - val_loss:
1962490496.0000 - val_mean_absolute_error: 18453.7422 - 113ms/epoch - 3ms/step
Epoch 314/500
37/37 - 0s - loss: 275867424.0000 - mean_absolute_error: 10305.3994 - val_loss:
1962713856.0000 - val_mean_absolute_error: 18400.1934 - 111ms/epoch - 3ms/step
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Epoch 315/500
37/37 - 0s - loss: 273343744.0000 - mean_absolute_error: 10274.3301 - val_loss:
1965288576.0000 - val_mean_absolute_error: 18335.6465 - 105ms/epoch - 3ms/step
Epoch 316/500
37/37 - 0s - loss: 273756288.0000 - mean_absolute_error: 10290.3789 - val_loss:
1965483392.0000 - val_mean_absolute_error: 18375.0176 - 113ms/epoch - 3ms/step
Epoch 317/500
37/37 - 0s - loss: 272437696.0000 - mean_absolute_error: 10355.2158 - val_loss:
1980955520.0000 - val_mean_absolute_error: 18568.1016 - 109ms/epoch - 3ms/step
Epoch 318/500
37/37 - 0s - loss: 270522752.0000 - mean_absolute_error: 10190.5459 - val_loss:
1975409024.0000 - val_mean_absolute_error: 18430.7949 - 114ms/epoch - 3ms/step
Epoch 319/500
37/37 - 0s - loss: 270709920.0000 - mean_absolute_error: 10185.4717 - val_loss:
1984399744.0000 - val_mean_absolute_error: 18514.6230 - 121ms/epoch - 3ms/step
Epoch 320/500
37/37 - 0s - loss: 271147584.0000 - mean_absolute_error: 10217.7969 - val_loss:
1987903488.0000 - val_mean_absolute_error: 18573.6816 - 112ms/epoch - 3ms/step
Epoch 321/500
37/37 - 0s - loss: 272478816.0000 - mean_absolute_error: 10325.6631 - val_loss:
1997443456.0000 - val_mean_absolute_error: 18622.5586 - 108ms/epoch - 3ms/step
Epoch 322/500
37/37 - 0s - loss: 269339904.0000 - mean_absolute_error: 10241.8984 - val_loss:
1982945408.0000 - val_mean_absolute_error: 18533.0898 - 119ms/epoch - 3ms/step
Epoch 323/500
37/37 - 0s - loss: 270021280.0000 - mean_absolute_error: 10186.3066 - val_loss:
1975498496.0000 - val_mean_absolute_error: 18487.6582 - 112ms/epoch - 3ms/step
Epoch 324/500
37/37 - 0s - loss: 267548224.0000 - mean_absolute_error: 10154.8320 - val_loss:
1968314240.0000 - val_mean_absolute_error: 18393.9512 - 114ms/epoch - 3ms/step
Epoch 325/500
37/37 - 0s - loss: 268661344.0000 - mean_absolute_error: 10283.6895 - val_loss:
1992403968.0000 - val_mean_absolute_error: 18630.2129 - 114ms/epoch - 3ms/step
Epoch 326/500
37/37 - 0s - loss: 265463216.0000 - mean_absolute_error: 10216.1191 - val_loss:
1963513728.0000 - val_mean_absolute_error: 18340.6309 - 114ms/epoch - 3ms/step
Epoch 327/500
37/37 - 0s - loss: 265766352.0000 - mean_absolute_error: 10175.3545 - val_loss:
1970292224.0000 - val_mean_absolute_error: 18401.0215 - 153ms/epoch - 4ms/step
Epoch 328/500
37/37 - 0s - loss: 261373104.0000 - mean_absolute_error: 10089.1201 - val_loss:
1963171456.0000 - val_mean_absolute_error: 18347.5059 - 155ms/epoch - 4ms/step
Epoch 329/500
37/37 - 0s - loss: 265185920.0000 - mean_absolute_error: 10205.2324 - val_loss:
1965552384.0000 - val_mean_absolute_error: 18365.7070 - 192ms/epoch - 5ms/step
Epoch 330/500
37/37 - 0s - loss: 261607760.0000 - mean_absolute_error: 10071.0098 - val_loss:
1966615296.0000 - val_mean_absolute_error: 18406.0488 - 150ms/epoch - 4ms/step
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Epoch 331/500
37/37 - 0s - loss: 259878976.0000 - mean_absolute_error: 10099.5391 - val_loss:
2007549440.0000 - val_mean_absolute_error: 18821.0020 - 144ms/epoch - 4ms/step
Epoch 332/500
37/37 - 0s - loss: 258855584.0000 - mean_absolute_error: 10100.4824 - val_loss:
1960648320.0000 - val_mean_absolute_error: 18354.0273 - 196ms/epoch - 5ms/step
Epoch 333/500
37/37 - 0s - loss: 265097728.0000 - mean_absolute_error: 10224.2773 - val_loss:
1987716736.0000 - val_mean_absolute_error: 18691.4590 - 165ms/epoch - 4ms/step
Epoch 334/500
37/37 - 0s - loss: 260283824.0000 - mean_absolute_error: 10106.5654 - val_loss:
1955898368.0000 - val_mean_absolute_error: 18361.8828 - 152ms/epoch - 4ms/step
Epoch 335/500
37/37 - 0s - loss: 257267088.0000 - mean_absolute_error: 9964.2676 - val_loss:
1974608640.0000 - val_mean_absolute_error: 18407.7324 - 154ms/epoch - 4ms/step
Epoch 336/500
37/37 - 0s - loss: 257638624.0000 - mean_absolute_error: 10046.7461 - val_loss:
2005139968.0000 - val_mean_absolute_error: 18771.0000 - 150ms/epoch - 4ms/step
Epoch 337/500
37/37 - 0s - loss: 255490560.0000 - mean_absolute_error: 10102.6768 - val_loss:
1962809472.0000 - val_mean_absolute_error: 18376.1406 - 152ms/epoch - 4ms/step
Epoch 338/500
37/37 - 0s - loss: 254446208.0000 - mean_absolute_error: 9946.3584 - val_loss:
1973240704.0000 - val_mean_absolute_error: 18413.5703 - 210ms/epoch - 6ms/step
Epoch 339/500
37/37 - 0s - loss: 253086896.0000 - mean_absolute_error: 9967.8037 - val_loss:
1991278848.0000 - val_mean_absolute_error: 18593.6465 - 165ms/epoch - 4ms/step
Epoch 340/500
37/37 - 0s - loss: 253087632.0000 - mean_absolute_error: 9935.3428 - val_loss:
2000202240.0000 - val_mean_absolute_error: 18645.4277 - 194ms/epoch - 5ms/step
Epoch 341/500
37/37 - 0s - loss: 250675456.0000 - mean_absolute_error: 9923.5107 - val_loss:
1965924864.0000 - val_mean_absolute_error: 18365.0586 - 205ms/epoch - 6ms/step
Epoch 342/500
37/37 - 0s - loss: 252501200.0000 - mean_absolute_error: 9933.4648 - val_loss:
1957866496.0000 - val_mean_absolute_error: 18354.2852 - 151ms/epoch - 4ms/step
Epoch 343/500
37/37 - 0s - loss: 250086944.0000 - mean_absolute_error: 9885.5322 - val_loss:
1967708800.0000 - val_mean_absolute_error: 18386.6855 - 156ms/epoch - 4ms/step
Epoch 344/500
37/37 - 0s - loss: 251843376.0000 - mean_absolute_error: 9893.9111 - val_loss:
1959144832.0000 - val_mean_absolute_error: 18331.8535 - 189ms/epoch - 5ms/step
Epoch 345/500
37/37 - 0s - loss: 248864032.0000 - mean_absolute_error: 9889.1475 - val_loss:
1973896576.0000 - val_mean_absolute_error: 18446.1191 - 165ms/epoch - 4ms/step
Epoch 346/500
37/37 - 0s - loss: 247631344.0000 - mean_absolute_error: 9920.6504 - val_loss:
1973411456.0000 - val_mean_absolute_error: 18451.0410 - 160ms/epoch - 4ms/step
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Epoch 347/500
37/37 - 0s - loss: 257795536.0000 - mean_absolute_error: 10130.9854 - val_loss:
1948984320.0000 - val_mean_absolute_error: 18497.8516 - 113ms/epoch - 3ms/step
Epoch 348/500
37/37 - 0s - loss: 247624688.0000 - mean_absolute_error: 9855.7910 - val_loss:
1955331840.0000 - val_mean_absolute_error: 18384.3125 - 108ms/epoch - 3ms/step
Epoch 349/500
37/37 - 0s - loss: 245028464.0000 - mean_absolute_error: 9823.5967 - val_loss:
1957358592.0000 - val_mean_absolute_error: 18392.1582 - 114ms/epoch - 3ms/step
Epoch 350/500
37/37 - 0s - loss: 248836992.0000 - mean_absolute_error: 10029.3838 - val_loss:
1990507648.0000 - val_mean_absolute_error: 18632.3848 - 111ms/epoch - 3ms/step
Epoch 351/500
37/37 - 0s - loss: 248603776.0000 - mean_absolute_error: 9980.8740 - val_loss:
1973245440.0000 - val_mean_absolute_error: 18520.7988 - 105ms/epoch - 3ms/step
Epoch 352/500
37/37 - 0s - loss: 245349888.0000 - mean_absolute_error: 9922.8486 - val_loss:
1976991232.0000 - val_mean_absolute_error: 18498.5410 - 111ms/epoch - 3ms/step
Epoch 353/500
37/37 - 0s - loss: 243042272.0000 - mean_absolute_error: 9833.9385 - val_loss:
1963983104.0000 - val_mean_absolute_error: 18400.6582 - 112ms/epoch - 3ms/step
Epoch 354/500
37/37 - 0s - loss: 245773440.0000 - mean_absolute_error: 9870.6104 - val_loss:
1978673280.0000 - val_mean_absolute_error: 18532.8008 - 119ms/epoch - 3ms/step
Epoch 355/500
37/37 - 0s - loss: 243488768.0000 - mean_absolute_error: 9875.4160 - val_loss:
1976910080.0000 - val_mean_absolute_error: 18488.2480 - 106ms/epoch - 3ms/step
Epoch 356/500
37/37 - 0s - loss: 244908368.0000 - mean_absolute_error: 10014.9307 - val_loss:
1989619968.0000 - val_mean_absolute_error: 18637.0938 - 106ms/epoch - 3ms/step
Epoch 357/500
37/37 - 0s - loss: 238644288.0000 - mean_absolute_error: 9742.6465 - val_loss:
1977247360.0000 - val_mean_absolute_error: 18466.8301 - 105ms/epoch - 3ms/step
Epoch 358/500
37/37 - 0s - loss: 238060592.0000 - mean_absolute_error: 9675.3594 - val_loss:
1981415168.0000 - val_mean_absolute_error: 18489.6211 - 109ms/epoch - 3ms/step
Epoch 359/500
37/37 - 0s - loss: 236194912.0000 - mean_absolute_error: 9666.2373 - val_loss:
1985683072.0000 - val_mean_absolute_error: 18528.9082 - 108ms/epoch - 3ms/step
Epoch 360/500
37/37 - 0s - loss: 236712224.0000 - mean_absolute_error: 9710.7744 - val_loss:
1996631040.0000 - val_mean_absolute_error: 18677.6133 - 112ms/epoch - 3ms/step
Epoch 361/500
37/37 - 0s - loss: 236647136.0000 - mean_absolute_error: 9742.1045 - val_loss:
1973221632.0000 - val_mean_absolute_error: 18450.9238 - 115ms/epoch - 3ms/step
Epoch 362/500
37/37 - 0s - loss: 234774816.0000 - mean_absolute_error: 9716.9922 - val_loss:
1973469824.0000 - val_mean_absolute_error: 18457.3535 - 111ms/epoch - 3ms/step
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Epoch 363/500
37/37 - 0s - loss: 234802080.0000 - mean_absolute_error: 9656.3428 - val_loss:
1964552960.0000 - val_mean_absolute_error: 18467.1602 - 114ms/epoch - 3ms/step
Epoch 364/500
37/37 - 0s - loss: 237461024.0000 - mean_absolute_error: 9775.5479 - val_loss:
1969442944.0000 - val_mean_absolute_error: 18402.4316 - 115ms/epoch - 3ms/step
Epoch 365/500
37/37 - 0s - loss: 232636304.0000 - mean_absolute_error: 9617.0684 - val_loss:
1973046400.0000 - val_mean_absolute_error: 18476.2480 - 115ms/epoch - 3ms/step
Epoch 366/500
37/37 - 0s - loss: 235845072.0000 - mean_absolute_error: 9774.5312 - val_loss:
1953810688.0000 - val_mean_absolute_error: 18377.1289 - 113ms/epoch - 3ms/step
Epoch 367/500
37/37 - 0s - loss: 231050720.0000 - mean_absolute_error: 9610.1016 - val_loss:
1984700800.0000 - val_mean_absolute_error: 18607.4062 - 114ms/epoch - 3ms/step
Epoch 368/500
37/37 - 0s - loss: 234026048.0000 - mean_absolute_error: 9764.0869 - val_loss:
1978318848.0000 - val_mean_absolute_error: 18405.5469 - 113ms/epoch - 3ms/step
Epoch 369/500
37/37 - 0s - loss: 227600976.0000 - mean_absolute_error: 9529.9551 - val_loss:
2005015808.0000 - val_mean_absolute_error: 18660.2422 - 121ms/epoch - 3ms/step
Epoch 370/500
37/37 - 0s - loss: 227592192.0000 - mean_absolute_error: 9543.9297 - val_loss:
1981304576.0000 - val_mean_absolute_error: 18441.9082 - 110ms/epoch - 3ms/step
Epoch 371/500
37/37 - 0s - loss: 229100240.0000 - mean_absolute_error: 9569.0059 - val_loss:
1988350976.0000 - val_mean_absolute_error: 18517.5879 - 124ms/epoch - 3ms/step
Epoch 372/500
37/37 - 0s - loss: 228619392.0000 - mean_absolute_error: 9711.9062 - val_loss:
1955675264.0000 - val_mean_absolute_error: 18424.6875 - 127ms/epoch - 3ms/step
Epoch 373/500
37/37 - 0s - loss: 230622416.0000 - mean_absolute_error: 9703.8496 - val_loss:
1990957184.0000 - val_mean_absolute_error: 18730.3535 - 110ms/epoch - 3ms/step
Epoch 374/500
37/37 - 0s - loss: 230093760.0000 - mean_absolute_error: 9644.9951 - val_loss:
1988254464.0000 - val_mean_absolute_error: 18547.6543 - 113ms/epoch - 3ms/step
Epoch 375/500
37/37 - 0s - loss: 226843184.0000 - mean_absolute_error: 9620.9463 - val_loss:
1988843008.0000 - val_mean_absolute_error: 18527.7441 - 108ms/epoch - 3ms/step
Epoch 376/500
37/37 - 0s - loss: 225506080.0000 - mean_absolute_error: 9571.4072 - val_loss:
1964365312.0000 - val_mean_absolute_error: 18559.0215 - 117ms/epoch - 3ms/step
Epoch 377/500
37/37 - 0s - loss: 224417936.0000 - mean_absolute_error: 9522.6104 - val_loss:
1986422144.0000 - val_mean_absolute_error: 18511.6426 - 107ms/epoch - 3ms/step
Epoch 378/500
37/37 - 0s - loss: 221005696.0000 - mean_absolute_error: 9404.7627 - val_loss:
2003083648.0000 - val_mean_absolute_error: 18649.7949 - 111ms/epoch - 3ms/step
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Epoch 379/500
37/37 - 0s - loss: 226041344.0000 - mean_absolute_error: 9655.5898 - val_loss:
2009643520.0000 - val_mean_absolute_error: 18756.8867 - 113ms/epoch - 3ms/step
Epoch 380/500
37/37 - 0s - loss: 223421872.0000 - mean_absolute_error: 9559.0996 - val_loss:
1966072576.0000 - val_mean_absolute_error: 18428.6758 - 119ms/epoch - 3ms/step
Epoch 381/500
37/37 - 0s - loss: 224070432.0000 - mean_absolute_error: 9660.2051 - val_loss:
1987120896.0000 - val_mean_absolute_error: 18670.2852 - 108ms/epoch - 3ms/step
Epoch 382/500
37/37 - 0s - loss: 220963152.0000 - mean_absolute_error: 9475.7002 - val_loss:
1977655808.0000 - val_mean_absolute_error: 18420.9844 - 106ms/epoch - 3ms/step
Epoch 383/500
37/37 - 0s - loss: 218772432.0000 - mean_absolute_error: 9408.4121 - val_loss:
2010487168.0000 - val_mean_absolute_error: 18722.5820 - 107ms/epoch - 3ms/step
Epoch 384/500
37/37 - 0s - loss: 221390512.0000 - mean_absolute_error: 9488.4932 - val_loss:
2009785344.0000 - val_mean_absolute_error: 18659.1680 - 107ms/epoch - 3ms/step
Epoch 385/500
37/37 - 0s - loss: 218196256.0000 - mean_absolute_error: 9467.9863 - val_loss:
2009806848.0000 - val_mean_absolute_error: 18692.4141 - 120ms/epoch - 3ms/step
Epoch 386/500
37/37 - 0s - loss: 221081632.0000 - mean_absolute_error: 9649.1973 - val_loss:
2016903680.0000 - val_mean_absolute_error: 18704.6797 - 116ms/epoch - 3ms/step
Epoch 387/500
37/37 - 0s - loss: 217589888.0000 - mean_absolute_error: 9367.4834 - val_loss:
1997756288.0000 - val_mean_absolute_error: 18542.5918 - 116ms/epoch - 3ms/step
Epoch 388/500
37/37 - 0s - loss: 219130288.0000 - mean_absolute_error: 9542.9668 - val_loss:
1984919168.0000 - val_mean_absolute_error: 18473.5508 - 113ms/epoch - 3ms/step
Epoch 389/500
37/37 - 0s - loss: 220327040.0000 - mean_absolute_error: 9539.2344 - val_loss:
2021659520.0000 - val_mean_absolute_error: 18810.1680 - 128ms/epoch - 3ms/step
Epoch 390/500
37/37 - 0s - loss: 214174640.0000 - mean_absolute_error: 9350.1963 - val_loss:
2005485952.0000 - val_mean_absolute_error: 18623.0371 - 112ms/epoch - 3ms/step
Epoch 391/500
37/37 - 0s - loss: 218483984.0000 - mean_absolute_error: 9481.0049 - val_loss:
2003369728.0000 - val_mean_absolute_error: 18635.6172 - 113ms/epoch - 3ms/step
Epoch 392/500
37/37 - 0s - loss: 214345264.0000 - mean_absolute_error: 9273.4590 - val_loss:
2002467328.0000 - val_mean_absolute_error: 18646.7559 - 117ms/epoch - 3ms/step
Epoch 393/500
37/37 - 0s - loss: 214168064.0000 - mean_absolute_error: 9418.5479 - val_loss:
2000678912.0000 - val_mean_absolute_error: 18648.8828 - 114ms/epoch - 3ms/step
Epoch 394/500
37/37 - 0s - loss: 211977168.0000 - mean_absolute_error: 9330.3818 - val_loss:
2002420352.0000 - val_mean_absolute_error: 18576.2051 - 111ms/epoch - 3ms/step
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Epoch 395/500
37/37 - 0s - loss: 213763584.0000 - mean_absolute_error: 9341.1289 - val_loss:
2019038464.0000 - val_mean_absolute_error: 18683.0020 - 114ms/epoch - 3ms/step
Epoch 396/500
37/37 - 0s - loss: 209146128.0000 - mean_absolute_error: 9293.8633 - val_loss:
2023421568.0000 - val_mean_absolute_error: 18841.0293 - 117ms/epoch - 3ms/step
Epoch 397/500
37/37 - 0s - loss: 214376848.0000 - mean_absolute_error: 9528.6162 - val_loss:
2004360704.0000 - val_mean_absolute_error: 18645.5410 - 121ms/epoch - 3ms/step
Epoch 398/500
37/37 - 0s - loss: 210341392.0000 - mean_absolute_error: 9321.5088 - val_loss:
1977187712.0000 - val_mean_absolute_error: 18534.6465 - 112ms/epoch - 3ms/step
Epoch 399/500
37/37 - 0s - loss: 211423056.0000 - mean_absolute_error: 9257.7500 - val_loss:
1988617472.0000 - val_mean_absolute_error: 18683.7207 - 117ms/epoch - 3ms/step
Epoch 400/500
37/37 - 0s - loss: 209409600.0000 - mean_absolute_error: 9245.4209 - val_loss:
1986912128.0000 - val_mean_absolute_error: 18507.4648 - 115ms/epoch - 3ms/step
Epoch 401/500
37/37 - 0s - loss: 208507664.0000 - mean_absolute_error: 9219.3447 - val_loss:
1988212992.0000 - val_mean_absolute_error: 18559.3555 - 112ms/epoch - 3ms/step
Epoch 402/500
37/37 - 0s - loss: 208505552.0000 - mean_absolute_error: 9334.4092 - val_loss:
1993176832.0000 - val_mean_absolute_error: 18663.2832 - 120ms/epoch - 3ms/step
Epoch 403/500
37/37 - 0s - loss: 207595072.0000 - mean_absolute_error: 9272.2227 - val_loss:
2005915520.0000 - val_mean_absolute_error: 18712.6172 - 119ms/epoch - 3ms/step
Epoch 404/500
37/37 - 0s - loss: 208165280.0000 - mean_absolute_error: 9392.7080 - val_loss:
2022858240.0000 - val_mean_absolute_error: 18883.6699 - 113ms/epoch - 3ms/step
Epoch 405/500
37/37 - 0s - loss: 203623280.0000 - mean_absolute_error: 9176.8691 - val_loss:
2008412416.0000 - val_mean_absolute_error: 18650.6738 - 115ms/epoch - 3ms/step
Epoch 406/500
37/37 - 0s - loss: 205432080.0000 - mean_absolute_error: 9234.0879 - val_loss:
2012457728.0000 - val_mean_absolute_error: 18726.4355 - 135ms/epoch - 4ms/step
Epoch 407/500
37/37 - 0s - loss: 203627680.0000 - mean_absolute_error: 9201.3320 - val_loss:
1989666944.0000 - val_mean_absolute_error: 18579.6543 - 123ms/epoch - 3ms/step
Epoch 408/500
37/37 - 0s - loss: 204872880.0000 - mean_absolute_error: 9239.8145 - val_loss:
1982371584.0000 - val_mean_absolute_error: 18504.0371 - 120ms/epoch - 3ms/step
Epoch 409/500
37/37 - 0s - loss: 201904256.0000 - mean_absolute_error: 9087.2793 - val_loss:
1998646016.0000 - val_mean_absolute_error: 18629.1992 - 124ms/epoch - 3ms/step
Epoch 410/500
37/37 - 0s - loss: 200879008.0000 - mean_absolute_error: 9091.6201 - val_loss:
2015989248.0000 - val_mean_absolute_error: 18738.3398 - 114ms/epoch - 3ms/step
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Epoch 411/500
37/37 - 0s - loss: 202025568.0000 - mean_absolute_error: 9169.9180 - val_loss:
2007876224.0000 - val_mean_absolute_error: 18748.7012 - 111ms/epoch - 3ms/step
Epoch 412/500
37/37 - 0s - loss: 198041952.0000 - mean_absolute_error: 9046.4785 - val_loss:
1993578624.0000 - val_mean_absolute_error: 18606.5312 - 111ms/epoch - 3ms/step
Epoch 413/500
37/37 - 0s - loss: 201169504.0000 - mean_absolute_error: 9088.7988 - val_loss:
1986473856.0000 - val_mean_absolute_error: 18579.7676 - 114ms/epoch - 3ms/step
Epoch 414/500
37/37 - 0s - loss: 198801984.0000 - mean_absolute_error: 9083.8057 - val_loss:
1998845568.0000 - val_mean_absolute_error: 18645.4805 - 126ms/epoch - 3ms/step
Epoch 415/500
37/37 - 0s - loss: 199263520.0000 - mean_absolute_error: 9115.7803 - val_loss:
1982077568.0000 - val_mean_absolute_error: 18560.3516 - 111ms/epoch - 3ms/step
Epoch 416/500
37/37 - 0s - loss: 196225952.0000 - mean_absolute_error: 9030.9131 - val_loss:
2015694080.0000 - val_mean_absolute_error: 18796.8242 - 107ms/epoch - 3ms/step
Epoch 417/500
37/37 - 0s - loss: 196452064.0000 - mean_absolute_error: 9083.3125 - val_loss:
1987386112.0000 - val_mean_absolute_error: 18543.9238 - 108ms/epoch - 3ms/step
Epoch 418/500
37/37 - 0s - loss: 195548288.0000 - mean_absolute_error: 8964.0771 - val_loss:
2003953792.0000 - val_mean_absolute_error: 18693.7910 - 119ms/epoch - 3ms/step
Epoch 419/500
37/37 - 0s - loss: 194886736.0000 - mean_absolute_error: 8988.6230 - val_loss:
1989021184.0000 - val_mean_absolute_error: 18612.6660 - 104ms/epoch - 3ms/step
Epoch 420/500
37/37 - 0s - loss: 194422608.0000 - mean_absolute_error: 8978.6943 - val_loss:
2006849024.0000 - val_mean_absolute_error: 18711.7988 - 108ms/epoch - 3ms/step
Epoch 421/500
37/37 - 0s - loss: 193696832.0000 - mean_absolute_error: 9069.6836 - val_loss:
2008296832.0000 - val_mean_absolute_error: 18757.2363 - 111ms/epoch - 3ms/step
Epoch 422/500
37/37 - 0s - loss: 195173968.0000 - mean_absolute_error: 8998.2539 - val_loss:
1996637056.0000 - val_mean_absolute_error: 18590.4805 - 103ms/epoch - 3ms/step
Epoch 423/500
37/37 - 0s - loss: 193175760.0000 - mean_absolute_error: 9066.6123 - val_loss:
1992241024.0000 - val_mean_absolute_error: 18544.7422 - 120ms/epoch - 3ms/step
Epoch 424/500
37/37 - 0s - loss: 193782288.0000 - mean_absolute_error: 9001.0254 - val_loss:
2007100160.0000 - val_mean_absolute_error: 18858.0488 - 104ms/epoch - 3ms/step
Epoch 425/500
37/37 - 0s - loss: 192634832.0000 - mean_absolute_error: 8972.2246 - val_loss:
2018201984.0000 - val_mean_absolute_error: 18748.6426 - 105ms/epoch - 3ms/step
Epoch 426/500
37/37 - 0s - loss: 189916944.0000 - mean_absolute_error: 8962.4043 - val_loss:
1988613888.0000 - val_mean_absolute_error: 18649.2188 - 113ms/epoch - 3ms/step
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Epoch 427/500
37/37 - 0s - loss: 194127312.0000 - mean_absolute_error: 9107.7959 - val_loss:
2016926336.0000 - val_mean_absolute_error: 18760.4785 - 119ms/epoch - 3ms/step
Epoch 428/500
37/37 - 0s - loss: 192810496.0000 - mean_absolute_error: 9081.8760 - val_loss:
2006928256.0000 - val_mean_absolute_error: 18687.1152 - 120ms/epoch - 3ms/step
Epoch 429/500
37/37 - 0s - loss: 189669888.0000 - mean_absolute_error: 8884.5479 - val_loss:
2009663744.0000 - val_mean_absolute_error: 18695.1387 - 115ms/epoch - 3ms/step
Epoch 430/500
37/37 - 0s - loss: 188777472.0000 - mean_absolute_error: 8895.0449 - val_loss:
1996738304.0000 - val_mean_absolute_error: 18596.8047 - 117ms/epoch - 3ms/step
Epoch 431/500
37/37 - 0s - loss: 187255872.0000 - mean_absolute_error: 8799.1104 - val_loss:
2048110592.0000 - val_mean_absolute_error: 19022.3809 - 118ms/epoch - 3ms/step
Epoch 432/500
37/37 - 0s - loss: 188569312.0000 - mean_absolute_error: 8883.1914 - val_loss:
2010216192.0000 - val_mean_absolute_error: 18749.5977 - 205ms/epoch - 6ms/step
Epoch 433/500
37/37 - 0s - loss: 188162800.0000 - mean_absolute_error: 8902.7002 - val_loss:
2008830976.0000 - val_mean_absolute_error: 18714.9766 - 158ms/epoch - 4ms/step
Epoch 434/500
37/37 - 0s - loss: 186626224.0000 - mean_absolute_error: 8828.8652 - val_loss:
2000402688.0000 - val_mean_absolute_error: 18613.0801 - 198ms/epoch - 5ms/step
Epoch 435/500
37/37 - 0s - loss: 183443984.0000 - mean_absolute_error: 8756.0195 - val_loss:
2005078144.0000 - val_mean_absolute_error: 18722.8574 - 203ms/epoch - 5ms/step
Epoch 436/500
37/37 - 0s - loss: 185144768.0000 - mean_absolute_error: 8873.4199 - val_loss:
2017190912.0000 - val_mean_absolute_error: 18812.8438 - 159ms/epoch - 4ms/step
Epoch 437/500
37/37 - 0s - loss: 182521760.0000 - mean_absolute_error: 8747.1895 - val_loss:
2028409472.0000 - val_mean_absolute_error: 18835.7480 - 158ms/epoch - 4ms/step
Epoch 438/500
37/37 - 0s - loss: 183764096.0000 - mean_absolute_error: 8888.7607 - val_loss:
2006296448.0000 - val_mean_absolute_error: 18672.2168 - 140ms/epoch - 4ms/step
Epoch 439/500
37/37 - 0s - loss: 182037392.0000 - mean_absolute_error: 8817.5332 - val_loss:
1983057408.0000 - val_mean_absolute_error: 18623.0742 - 143ms/epoch - 4ms/step
Epoch 440/500
37/37 - 0s - loss: 184045936.0000 - mean_absolute_error: 8895.0020 - val_loss:
2041951360.0000 - val_mean_absolute_error: 19029.0039 - 146ms/epoch - 4ms/step
Epoch 441/500
37/37 - 0s - loss: 183403472.0000 - mean_absolute_error: 8809.7051 - val_loss:
1998919808.0000 - val_mean_absolute_error: 18673.5742 - 160ms/epoch - 4ms/step
Epoch 442/500
37/37 - 0s - loss: 179894016.0000 - mean_absolute_error: 8677.6787 - val_loss:
2031469696.0000 - val_mean_absolute_error: 18871.6074 - 191ms/epoch - 5ms/step
```

```
Epoch 443/500
37/37 - 0s - loss: 178813440.0000 - mean_absolute_error: 8644.7148 - val_loss:
2029992192.0000 - val_mean_absolute_error: 18827.0293 - 161ms/epoch - 4ms/step
Epoch 444/500
37/37 - 0s - loss: 180566768.0000 - mean_absolute_error: 8724.7100 - val_loss:
2001102720.0000 - val_mean_absolute_error: 18665.2012 - 178ms/epoch - 5ms/step
Epoch 445/500
37/37 - 0s - loss: 179962992.0000 - mean_absolute_error: 8698.9893 - val_loss:
2024215808.0000 - val_mean_absolute_error: 18853.9121 - 207ms/epoch - 6ms/step
Epoch 446/500
37/37 - 0s - loss: 177077648.0000 - mean_absolute_error: 8620.6738 - val_loss:
2002950272.0000 - val_mean_absolute_error: 18637.7402 - 169ms/epoch - 5ms/step
Epoch 447/500
37/37 - 0s - loss: 184295968.0000 - mean_absolute_error: 8925.7002 - val_loss:
2055891968.0000 - val_mean_absolute_error: 19129.8320 - 197ms/epoch - 5ms/step
Epoch 448/500
37/37 - 0s - loss: 179647968.0000 - mean_absolute_error: 8779.7646 - val_loss:
2017700096.0000 - val_mean_absolute_error: 18765.5918 - 166ms/epoch - 4ms/step
Epoch 449/500
37/37 - 0s - loss: 175303440.0000 - mean_absolute_error: 8585.8662 - val_loss:
2024278400.0000 - val_mean_absolute_error: 18792.4766 - 200ms/epoch - 5ms/step
Epoch 450/500
37/37 - 0s - loss: 174165264.0000 - mean_absolute_error: 8576.2305 - val_loss:
2022660224.0000 - val_mean_absolute_error: 18772.6875 - 154ms/epoch - 4ms/step
Epoch 451/500
37/37 - 0s - loss: 173675504.0000 - mean_absolute_error: 8635.5566 - val_loss:
2035284224.0000 - val_mean_absolute_error: 18915.7695 - 161ms/epoch - 4ms/step
Epoch 452/500
37/37 - 0s - loss: 175097616.0000 - mean_absolute_error: 8654.3047 - val_loss:
2014607872.0000 - val_mean_absolute_error: 18687.9238 - 113ms/epoch - 3ms/step
Epoch 453/500
37/37 - 0s - loss: 175193264.0000 - mean_absolute_error: 8673.3730 - val_loss:
2018830592.0000 - val_mean_absolute_error: 18790.8242 - 112ms/epoch - 3ms/step
Epoch 454/500
37/37 - 0s - loss: 174510800.0000 - mean_absolute_error: 8790.6562 - val_loss:
2012343424.0000 - val_mean_absolute_error: 18696.7324 - 111ms/epoch - 3ms/step
Epoch 455/500
37/37 - 0s - loss: 171950896.0000 - mean_absolute_error: 8574.0361 - val_loss:
2004212480.0000 - val_mean_absolute_error: 18748.0723 - 118ms/epoch - 3ms/step
Epoch 456/500
37/37 - 0s - loss: 175636592.0000 - mean_absolute_error: 8506.6299 - val_loss:
2025402240.0000 - val_mean_absolute_error: 18823.4219 - 112ms/epoch - 3ms/step
Epoch 457/500
37/37 - 0s - loss: 171108160.0000 - mean_absolute_error: 8500.9707 - val_loss:
2017194496.0000 - val_mean_absolute_error: 18721.7734 - 116ms/epoch - 3ms/step
Epoch 458/500
37/37 - 0s - loss: 173251360.0000 - mean_absolute_error: 8592.6387 - val_loss:
2022291072.0000 - val_mean_absolute_error: 18700.8945 - 107ms/epoch - 3ms/step
```

```
Epoch 459/500
37/37 - 0s - loss: 168826848.0000 - mean_absolute_error: 8464.7119 - val_loss:
2045357184.0000 - val_mean_absolute_error: 18870.9355 - 118ms/epoch - 3ms/step
Epoch 460/500
37/37 - 0s - loss: 169193568.0000 - mean_absolute_error: 8460.2217 - val_loss:
2020526976.0000 - val_mean_absolute_error: 18705.8535 - 108ms/epoch - 3ms/step
Epoch 461/500
37/37 - 0s - loss: 169510176.0000 - mean_absolute_error: 8532.4131 - val_loss:
2005574144.0000 - val_mean_absolute_error: 18814.8418 - 106ms/epoch - 3ms/step
Epoch 462/500
37/37 - 0s - loss: 168973472.0000 - mean_absolute_error: 8489.1055 - val_loss:
2025331072.0000 - val_mean_absolute_error: 18796.1660 - 105ms/epoch - 3ms/step
Epoch 463/500
37/37 - 0s - loss: 167964000.0000 - mean_absolute_error: 8437.0869 - val_loss:
2014175104.0000 - val_mean_absolute_error: 18766.7070 - 109ms/epoch - 3ms/step
Epoch 464/500
37/37 - 0s - loss: 166778912.0000 - mean_absolute_error: 8388.3613 - val_loss:
2033549056.0000 - val_mean_absolute_error: 18860.3281 - 112ms/epoch - 3ms/step
Epoch 465/500
37/37 - 0s - loss: 165126224.0000 - mean_absolute_error: 8377.0938 - val_loss:
2048402432.0000 - val_mean_absolute_error: 18925.3164 - 116ms/epoch - 3ms/step
Epoch 466/500
37/37 - 0s - loss: 169160960.0000 - mean_absolute_error: 8674.8584 - val_loss:
2055572608.0000 - val_mean_absolute_error: 18994.1270 - 115ms/epoch - 3ms/step
Epoch 467/500
37/37 - 0s - loss: 166182944.0000 - mean_absolute_error: 8471.9658 - val_loss:
2042907776.0000 - val_mean_absolute_error: 18866.9141 - 117ms/epoch - 3ms/step
Epoch 468/500
37/37 - 0s - loss: 164574000.0000 - mean_absolute_error: 8381.5127 - val_loss:
2028500352.0000 - val_mean_absolute_error: 18793.6992 - 112ms/epoch - 3ms/step
Epoch 469/500
37/37 - 0s - loss: 163762512.0000 - mean_absolute_error: 8322.6064 - val_loss:
2038096640.0000 - val_mean_absolute_error: 18837.9473 - 108ms/epoch - 3ms/step
Epoch 470/500
37/37 - 0s - loss: 164186192.0000 - mean_absolute_error: 8399.7324 - val_loss:
2012375168.0000 - val_mean_absolute_error: 18836.7480 - 114ms/epoch - 3ms/step
Epoch 471/500
37/37 - 0s - loss: 165303568.0000 - mean_absolute_error: 8483.2480 - val_loss:
2033129344.0000 - val_mean_absolute_error: 18814.3223 - 110ms/epoch - 3ms/step
Epoch 472/500
37/37 - 0s - loss: 163035104.0000 - mean_absolute_error: 8322.0957 - val_loss:
2052577408.0000 - val_mean_absolute_error: 18949.6582 - 110ms/epoch - 3ms/step
Epoch 473/500
37/37 - 0s - loss: 161579408.0000 - mean_absolute_error: 8300.0020 - val_loss:
2033131648.0000 - val_mean_absolute_error: 18784.9023 - 108ms/epoch - 3ms/step
Epoch 474/500
37/37 - 0s - loss: 161903792.0000 - mean_absolute_error: 8374.0850 - val_loss:
2057031680.0000 - val_mean_absolute_error: 19037.8438 - 106ms/epoch - 3ms/step
```

```
Epoch 475/500
37/37 - 0s - loss: 160162624.0000 - mean_absolute_error: 8343.4229 - val_loss:
2011865216.0000 - val_mean_absolute_error: 18905.5820 - 127ms/epoch - 3ms/step
Epoch 476/500
37/37 - 0s - loss: 160231104.0000 - mean_absolute_error: 8366.2744 - val_loss:
2054035328.0000 - val_mean_absolute_error: 18996.9902 - 107ms/epoch - 3ms/step
Epoch 477/500
37/37 - 0s - loss: 161768128.0000 - mean_absolute_error: 8398.6396 - val_loss:
2040327168.0000 - val_mean_absolute_error: 18867.6328 - 111ms/epoch - 3ms/step
Epoch 478/500
37/37 - 0s - loss: 159918976.0000 - mean_absolute_error: 8298.0312 - val_loss:
2023307264.0000 - val_mean_absolute_error: 18699.4590 - 110ms/epoch - 3ms/step
Epoch 479/500
37/37 - 0s - loss: 158067920.0000 - mean_absolute_error: 8195.1357 - val_loss:
2038530560.0000 - val_mean_absolute_error: 18888.9102 - 111ms/epoch - 3ms/step
Epoch 480/500
37/37 - 0s - loss: 157886384.0000 - mean_absolute_error: 8226.3818 - val_loss:
2033473408.0000 - val_mean_absolute_error: 18834.6777 - 113ms/epoch - 3ms/step
Epoch 481/500
37/37 - 0s - loss: 156767648.0000 - mean_absolute_error: 8202.4619 - val_loss:
2043491968.0000 - val_mean_absolute_error: 18835.9746 - 106ms/epoch - 3ms/step
Epoch 482/500
37/37 - 0s - loss: 157946704.0000 - mean_absolute_error: 8231.7129 - val_loss:
2030606080.0000 - val_mean_absolute_error: 18994.5020 - 115ms/epoch - 3ms/step
Epoch 483/500
37/37 - 0s - loss: 157250176.0000 - mean_absolute_error: 8210.8438 - val_loss:
2034472704.0000 - val_mean_absolute_error: 18897.0820 - 114ms/epoch - 3ms/step
Epoch 484/500
37/37 - 0s - loss: 156167872.0000 - mean_absolute_error: 8243.8047 - val_loss:
2044572416.0000 - val_mean_absolute_error: 18919.9258 - 124ms/epoch - 3ms/step
Epoch 485/500
37/37 - 0s - loss: 156437776.0000 - mean_absolute_error: 8210.8740 - val_loss:
2036720384.0000 - val_mean_absolute_error: 18910.4375 - 114ms/epoch - 3ms/step
Epoch 486/500
37/37 - 0s - loss: 154352384.0000 - mean_absolute_error: 8138.0703 - val_loss:
2052003328.0000 - val_mean_absolute_error: 18894.2988 - 111ms/epoch - 3ms/step
Epoch 487/500
37/37 - 0s - loss: 152956848.0000 - mean_absolute_error: 8094.0024 - val_loss:
2036109952.0000 - val_mean_absolute_error: 18860.8262 - 119ms/epoch - 3ms/step
Epoch 488/500
37/37 - 0s - loss: 153233776.0000 - mean_absolute_error: 8177.8237 - val_loss:
2031059456.0000 - val_mean_absolute_error: 18900.1816 - 108ms/epoch - 3ms/step
Epoch 489/500
37/37 - 0s - loss: 151404256.0000 - mean_absolute_error: 8055.6113 - val_loss:
2071304832.0000 - val_mean_absolute_error: 18994.8320 - 112ms/epoch - 3ms/step
Epoch 490/500
37/37 - 0s - loss: 151213328.0000 - mean_absolute_error: 8084.6387 - val_loss:
2047623680.0000 - val_mean_absolute_error: 18984.4395 - 119ms/epoch - 3ms/step
```

```
Epoch 491/500
37/37 - 0s - loss: 155755792.0000 - mean_absolute_error: 8245.8193 - val_loss:
2045710080.0000 - val_mean_absolute_error: 18854.2734 - 113ms/epoch - 3ms/step
Epoch 492/500
37/37 - 0s - loss: 152414592.0000 - mean_absolute_error: 8158.6899 - val_loss:
2042069888.0000 - val_mean_absolute_error: 18905.6172 - 110ms/epoch - 3ms/step
Epoch 493/500
37/37 - 0s - loss: 148983920.0000 - mean_absolute_error: 7982.9399 - val_loss:
2036105728.0000 - val_mean_absolute_error: 18847.5566 - 127ms/epoch - 3ms/step
Epoch 494/500
37/37 - 0s - loss: 153086352.0000 - mean_absolute_error: 8219.6826 - val_loss:
2030750592.0000 - val_mean_absolute_error: 19056.3379 - 112ms/epoch - 3ms/step
Epoch 495/500
37/37 - 0s - loss: 149952736.0000 - mean_absolute_error: 8078.9604 - val_loss:
2032747904.0000 - val_mean_absolute_error: 18892.9238 - 115ms/epoch - 3ms/step
Epoch 496/500
37/37 - 0s - loss: 148227744.0000 - mean_absolute_error: 7969.2886 - val_loss:
2035676928.0000 - val_mean_absolute_error: 18939.9512 - 113ms/epoch - 3ms/step
Epoch 497/500
37/37 - 0s - loss: 149149696.0000 - mean_absolute_error: 8024.8877 - val_loss:
2054691584.0000 - val_mean_absolute_error: 18929.3535 - 112ms/epoch - 3ms/step
Epoch 498/500
37/37 - 0s - loss: 148307392.0000 - mean_absolute_error: 8066.5361 - val_loss:
2042230784.0000 - val_mean_absolute_error: 18896.1230 - 111ms/epoch - 3ms/step
Epoch 499/500
37/37 - 0s - loss: 147157616.0000 - mean_absolute_error: 7963.6260 - val_loss:
2045255168.0000 - val_mean_absolute_error: 18982.2812 - 112ms/epoch - 3ms/step
Epoch 500/500
37/37 - 0s - loss: 146759360.0000 - mean_absolute_error: 7944.0088 - val_loss:
2046964864.0000 - val_mean_absolute_error: 18914.7188 - 112ms/epoch - 3ms/step
```

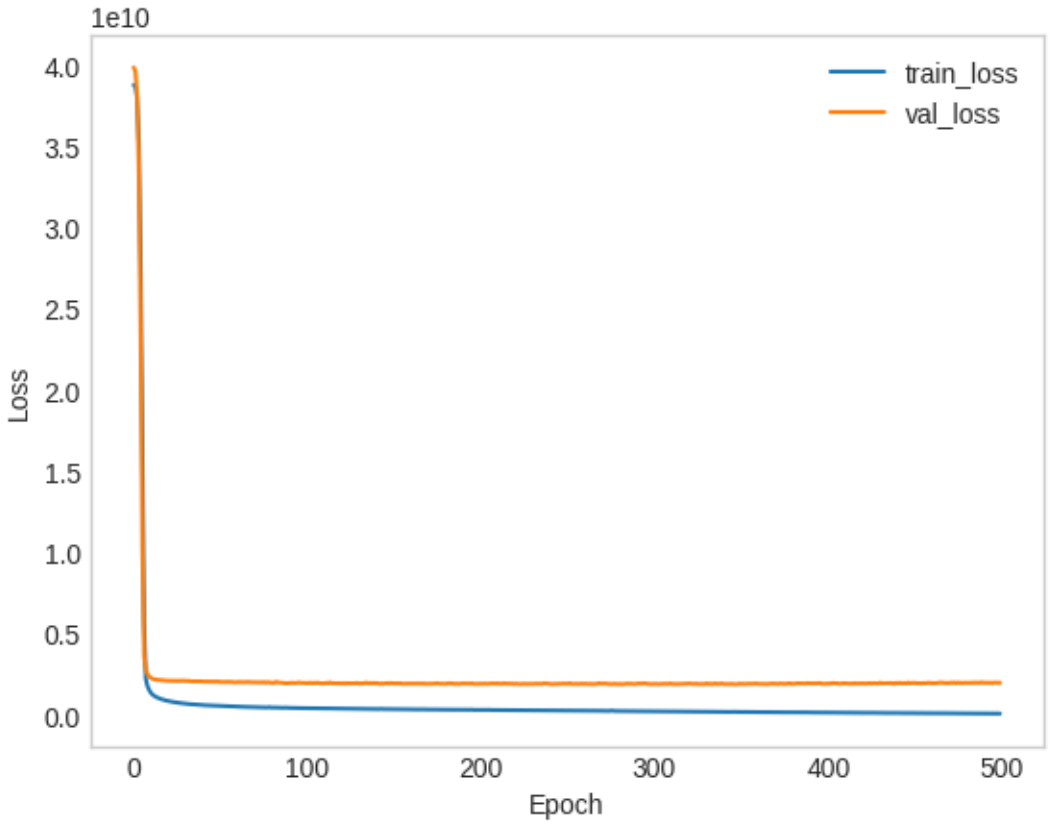
[ ]:
```python
# Make predictions on the test dataset
predictions = model.predict(X_test)

# Display some predictions
for i in range(25):
    print(f'Predicted price for house {i+1}: ${predictions[i][0]:.2f}')
```

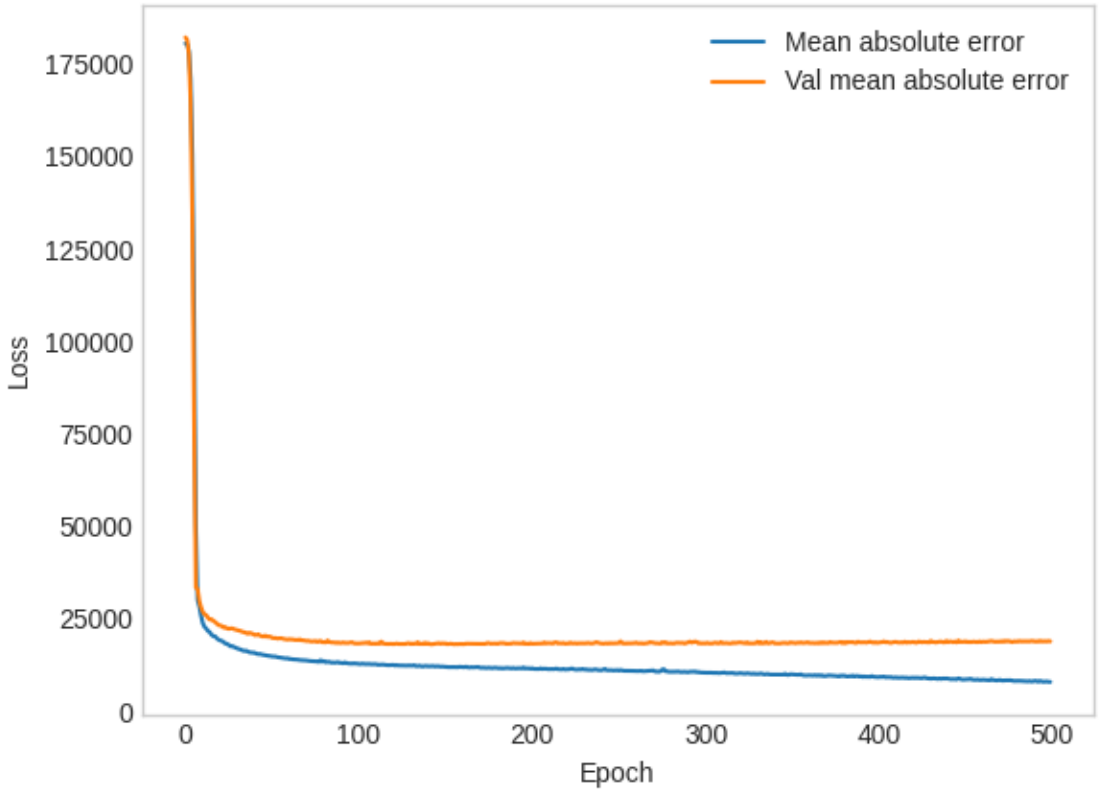
```
46/46 [==============================] - 0s 2ms/step
Predicted price for house 1: $133585.23
Predicted price for house 2: $127928.22
Predicted price for house 3: $190419.88
Predicted price for house 4: $198407.11
Predicted price for house 5: $183811.03
Predicted price for house 6: $176841.73
Predicted price for house 7: $179020.05
Predicted price for house 8: $171527.91
Predicted price for house 9: $176456.42
```

```
Predicted price for house 10: $130790.62
Predicted price for house 11: $171153.52
Predicted price for house 12: $99345.63
Predicted price for house 13: $100369.17
Predicted price for house 14: $147066.61
Predicted price for house 15: $109241.77
Predicted price for house 16: $384218.28
Predicted price for house 17: $259541.28
Predicted price for house 18: $264395.31
Predicted price for house 19: $270489.47
Predicted price for house 20: $505650.25
Predicted price for house 21: $322835.50
Predicted price for house 22: $205960.48
Predicted price for house 23: $176812.50
Predicted price for house 24: $162140.02
Predicted price for house 25: $178336.52
```

[93]:
```python
# Plot training history
plt.plot(history.history['loss'], label='train_loss')
plt.plot(history.history['val_loss'], label='val_loss')
plt.xlabel('Epoch')
plt.ylabel('Loss')
plt.legend()
plt.grid(False)
plt.show()
```



[94]:
```
# Plot training history
plt.plot(history.history['mean_absolute_error'], label='Mean absolute error')
plt.plot(history.history['val_mean_absolute_error'], label='Val mean absolute␣
↪error')
plt.xlabel('Epoch')
plt.ylabel('Loss')
plt.legend()
plt.grid(False)
plt.show()
```



[95]:
```
from sklearn.metrics import mean_absolute_error, r2_score

# Calculate additional metrics
predictions_train = model.predict(X_train)
mae_train = mean_absolute_error(y_train, predictions_train)
r2_train_RNN = r2_score(y_train, predictions_train)

print(f'Mean Absolute Error (Train): {mae_train}')
print(f'R-squared (Train): {r2_train_RNN}')
```

```
46/46 [==============================] - 0s 2ms/step
Mean Absolute Error (Train): 10061.435033176369
R-squared (Train): 0.9169872182215529
```

11.1 Conclusion

11.1.1 Positive correlations were observed, such as:

OverallQual vs. SalePrice: The overall quality of materials and finishing is positively correlated with the sale price.

GrLivArea vs. SalePrice: The above-ground living area also shows a positive correlation, indicating that homes with more living space tend to have higher prices.

GarageArea vs. SalePrice: The garage area has a positive relationship with the sale price.

YearBuilt vs. SalePrice: The year built is also positively correlated with the sale price.

GarageYearBuilt vs. SalePrice: The Garage year built has a positive correlation with the sale price.