🔢 List of Scalers & When to Use Them

Scaler / Transformer	When to Use	What It Does	Notes / Example Use-Cases
StandardScaler	Data looks **Gaussian (normal-ish)**	Scales features to have **mean=0** and **std=1**	Most common; good for Linear Regression, SVM
MinMaxScaler	Data has **known bounds** and no outliers	Scales to **[0, 1]** or other fixed range	Good for Neural Networks, Image data
RobustScaler	Data has **outliers**	Scales using **median and IQR** (25th–75th percentile)	Use if you want to scale but ignore outliers
MaxAbsScaler	Data is **sparse (mostly zeros)**	Scales to **[-1, 1]** by dividing by max absolute value	Good for text data (e.g., TF-IDF, NLP tasks)
PowerTransformer	Data is **skewed / not normal**, and you want to **normalize** it	Applies **Yeo-Johnson** or **Box-Cox** to make data more Gaussian	Use before Linear/Logistic regression
QuantileTransformer	You want a **uniform** or **normal distribution**	Maps data to a **uniform or normal** distribution	Powerful, but can distort relationships
Normalizer	You want each **row (sample)** to have **unit norm**	Scales each row (not column) to length 1 (L2 norm = 1)	Used in text/NLP with cosine similarity