ML algorithm category	**Input**	**Output**	**Use Case**
Dimensionality Reduction	$\mathbf{x} \in \mathbb{R}^d$	$\mathbf{y} \in \mathbb{R}^2$	**[insights]** 2D coordinates to create a "data map"
	$\mathbf{x} \in \mathbb{R}^d$	$\mathbf{y} \in \mathbb{R}^q$ with $q < d$	**[data preprocessing]** remove redundant features
Outlier/Anomaly Detection	$\mathbf{x} \in \mathbb{R}^d$	$y \in [0, 1]$	**[insights]** understand anomalies
			[data preprocessing] remove outliers
			[automation] alert for anomalies
Clustering	$\mathbf{x} \in \mathbb{R}^d$	$y \in \{0, ..., k-1\}$	**[insights]** understand naturally occurring groups
Regression	$\mathbf{x} \in \mathbb{R}^d$	$y \in \mathbb{R}$	**[automation]** predict continuous value
Classification	$\mathbf{x} \in \mathbb{R}^d$	$y \in \{0, 1\}$	**[automation]** predict binary label (2 classes)
	$\mathbf{x} \in \mathbb{R}^d$	$y \in \{0, ..., k-1\}$	**[automation]** predict multi-class label (k classes)
Recommender System	user	relevant items	**[automation]** ranking of a set of items
Information Retrieval	item	similar items	**[automation]** ranking of a set of items
Deep Learning	audio	text	**[automation]** speech recognition
	text	audio	**[automation]** speech generation
	text	text	**[automation]** machine translation
	text	text	**[automation]** text generation
	image	image	**[automation]** image segmentation / object recognition
	image	text	**[automation]** image captioning
	text	image	**[automation]** image generation
	image	image	**[automation]** neural style transfer
Reinforcement Learning	images & more	action	**[automation]** play (video) game, move robot arm, etc.
Additional Steps	learned model	explanation	**[insights]** understand why the model predicts y
	learned model	optimal $\mathbf{x} \in \mathbb{R}^d$	**[insights]** find a $\mathbf{x}$ with which the model predicts the desired y