Overview of Machine Learning Categories

ML Category	Subcategory	Details
Supervised Learning	**Classification**	- Fraud detection - Image classification - Customer retention - Diagnostics - Email spam and malware filtering - Sentiment analysis
	Regression	- Forecasting (weather, stock prices) - Predictions (sales, revenue) - Process optimization (supply chain) - Real estate pricing - Energy demand modeling
Unsupervised Learning	**Clustering**	- Recommendation systems - Targeted marketing - Customer segmentation - Genetic clustering - Social network analysis
	Dimensionality Reduction	- Big data visualizations - Meaningful compression - Structure discovery - Feature elicitation - Noise reduction - Data preprocessing
Semi-Supervised Learning		- Data labeling - Web content classification - Image and video annotation - Medical image analysis
Reinforcement Learning		- Real-time decisions - Game AI - Learning tasks - Skill acquisition - Robot navigation - Autonomous vehicles - Personalized recommendations
Deep Learning	**Convolutional Neural Networks (CNNs)**	- Image and video recognition - Image segmentation - Medical image analysis
	Recurrent Neural Networks (RNNs)	- Language modeling - Speech recognition - Time series prediction
	Generative Adversarial Networks (GANs)	- Image generation - Art creation - Data augmentation
	Transformer Models	- Natural language understanding - Machine translation - Text summarization