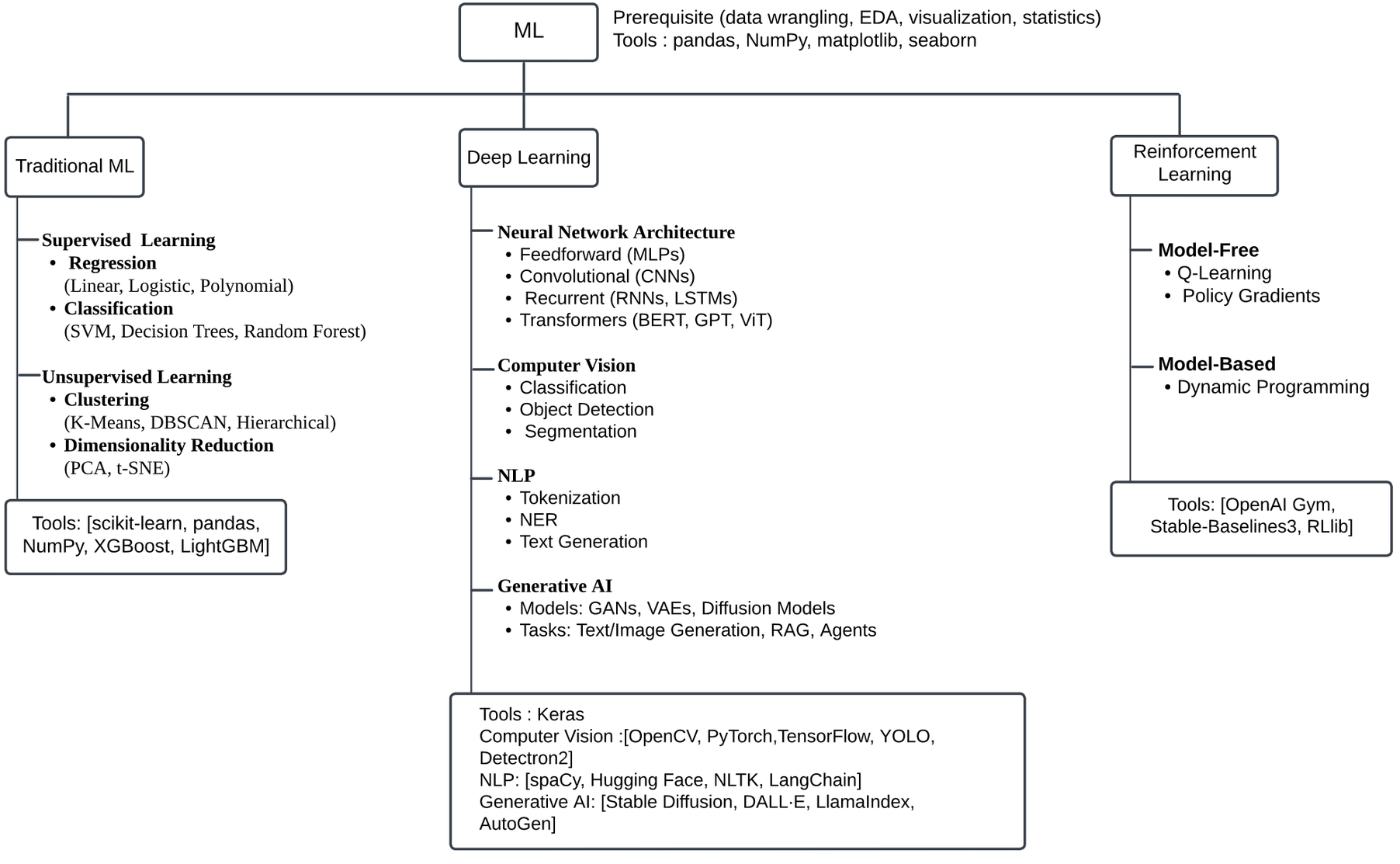
ML
Prerequisite (data wrangling, EDA, visualization, statistics)
Tools : pandas, NumPy, matplotlib, seaborn
Traditional ML
Deep Learning
Reinforcement Learning
Supervised Learning
• Regression
(Linear, Logistic, Polynomial)
• Classification
(SVM, Decision Trees, Random Forest)
Unsupervised Learning
• Clustering
(K-Means, DBSCAN, Hierarchical)
• Dimensionality Reduction
(PCA, t-SNE)
Tools: [scikit-learn, pandas, NumPy, XGBoost, LightGBM]
Neural Network Architecture
• Feedforward (MLPs)
• Convolutional (CNNs)
• Recurrent (RNNs, LSTMs)
• Transformers (BERT, GPT, ViT)
Computer Vision
• Classification
• Object Detection
• Segmentation
NLP
• Tokenization
• NER
• Text Generation
Generative AI
• Models: GANs, VAEs, Diffusion Models
• Tasks: Text/Image Generation, RAG, Agents
Tools : Keras
Computer Vision :[OpenCV, PyTorch,TensorFlow, YOLO, Detectron2]
NLP: [spaCy, Hugging Face, NLTK, LangChain]
Generative AI: [Stable Diffusion, DALL·E, LlamaIndex, AutoGen]
Model-Free
• Q-Learning
• Policy Gradients
Model-Based
• Dynamic Programming
Tools: [OpenAI Gym, Stable-Baselines3, RLlib]