Machine Learning Roadmap:

Mathematics and Statistics: Start by building a strong foundation in mathematics and statistics, as they form the basis of many machine learning algorithms. Key topics to focus on include linear algebra, calculus, probability theory, and statistics.

Programming: Learn a programming language commonly used in machine learning, such as Python or R. Familiarize yourself with the language's syntax, data structures, and libraries for scientific computing and data manipulation, such as NumPy and Pandas.

Machine Learning Concepts: Understand the fundamental concepts of machine learning, including supervised learning, unsupervised learning, and reinforcement learning. Learn about different types of algorithms, such as decision trees, support vector machines, neural networks, and clustering algorithms.

Data Preprocessing and Feature Engineering: Gain knowledge of techniques for data preprocessing, cleaning, and feature engineering. This involves handling missing data, normalization, scaling, handling categorical variables, and feature selection or extraction.

Model Training and Evaluation: Learn how to train machine learning models using various algorithms and evaluate their performance. Understand different evaluation metrics and techniques such as cross-validation and hyperparameter tuning.

Deep Learning: Explore the field of deep learning, which focuses on neural networks with multiple layers. Learn about popular deep learning frameworks like TensorFlow or PyTorch, and understand architectures such as convolutional neural networks (CNNs) for image data, recurrent neural networks (RNNs) for sequential data, and generative adversarial networks (GANs).

Machine Learning Libraries and Tools: Become proficient in using machine learning libraries and tools. Some popular ones include scikit-learn, TensorFlow, Keras, PyTorch, and Jupyter Notebook. These tools provide a wide range of pre-implemented algorithms and functions that can streamline your workflow.

Data Visualization: Learn to effectively visualize and communicate your data and results using libraries like Matplotlib, Seaborn, or Plotly. Visualization can help you gain insights into the data, understand model behavior, and present findings to stakeholders.

Deployment and Productionization: Gain knowledge of how to deploy machine learning models in production environments. Learn about techniques such as model serving, containerization (e.g., Docker), cloud deployment, and monitoring model performance.

Continued Learning and Exploration: Machine learning is a rapidly evolving field. Stay updated with the latest research papers, attend conferences, join online communities, participate in Kaggle competitions, and work on real-world projects to keep improving your skills and stay abreast of advancements in the field.

Learning Resources:   
kaggle.com Website for learning ML and DL concepts as well as a huge collection of dataset and notebook availablitiy

Coursera: "Machine Learning" by Andrew Ng (<https://www.coursera.org/learn/machine-learning>)

Blogs: <https://towardsdatascience.com/> / <https://medium.com/> / <https://www.kaggle.com/>