**Q1: Differences between TensorFlow and PyTorch**

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| --- | --- |
| * TensorFlow is made by Google. | * PyTorch is made by Meta (Facebook). |
| * TensorFlow uses **static computation graphs** (you define everything before running). | * PyTorch uses **dynamic graphs** (you can change things as you run). |
| * TensorFlow is better for **production and deployment**. | * PyTorch is better for **research and testing**. |

* Choose **TensorFlow** for apps or large systems.
* Choose **PyTorch** for experiments or learning.

**Q2: Use cases for Jupyter Notebooks**

* Used to **test code step by step** and see results quickly.
* Helps to **visualize data and model performance** easily.
* Allows you to **combine code, notes, and charts** in one file.
* Useful for **teaching, reporting, and sharing AI work**.

**Q3: How spaCy enhances NLP tasks**

* Basic Python can only find words or split text.
* spaCy understands **meaning and grammar** of text.
* It can find **names, dates, places, brands** automatically (NER).
* It’s faster and more accurate for real NLP work.
* Used in **chatbots, review analysis, and text classification**.

**Q4: Scikit-learn vs TensorFlow**

* **Scikit-learn:** Used for **simple/classical ML** (e.g., decision trees, regression).
* **TensorFlow:** Used for **deep learning** (e.g., CNNs, image or text models).
* Scikit-learn is **easy for beginners**.
* TensorFlow is **powerful but more advanced**.
* Scikit-learn works well with **small, structured data**.
* TensorFlow is best for **large, complex data** like images or speech.