**Lesson 07**

**CSC357 Machine Learning**

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**Different Libraries in Machine Learning**

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Different Libraries in Machine Learning

* Scikit-learn features various classifications, regressions and clustering algorithms including support vector machines, random forests, gradient boosting, k-means, etc.….

1. Preprocessing the data.
2. Select a model or classifier from SK-Learn.
3. Train and evaluate the model.

* TensorFlow is a library for dataflow and differentiable programming across a range of tasks

1. Preprocessing the data.
2. Build the model.
3. Train and estimate the model.

It’s a comprehensive and flexible ecosystem of tools, libraries and other resources that provide workflows with high-level APIs.

Advantages of TensorFlow:

1. Easy Model Building: TensorFlow offers multiple levels, high level and low-level API.

you use low level API when you require complete control of the SAML SSO process.

1. Robust ML Production Anywhere: TensorFlow lets you train and deploy your model easily, no matter what language or platform you use.
2. TensorFlow gives you the flexibility and control with features like the Keras Functional API

* Keras is designed to enable fast experimentation with deep neural networks, it focus on being user-friendly, modular, and extensible.

1. Capable of running on top of TensorFlow.
2. User-Friendly-Keras: has a simple, consistent interface optimized for common use cases which provides clear and actionable feedback for user errors.
3. Easy to Extend: With the help of Keras, you can easily write custom building blocks for new ideas and researches.
4. Easy to Use: Keras offers consistent & simple APIs

When should we use Keras or TensorFlow?

1. The primary software tool of deep learning is TensorFlow. It enables computers to identify every single data and learn patterns.
2. TensorFlow allows for immediate iteration along with intuitive debugging. (Meaning you are operating step by step)
3. Keras offers simple and consistent high-level APIs and reduce load for users.
4. Keras is more user friendly than TensorFlow.

Questions:

1. What are the three main libraries for machine learning?
2. What are some advantages of Keras over TensorFlow?
3. Why SK-Learn is not very useful in deeper machine learning projects?

Sites:

1. <https://analyticsindiamag.com/tensorflow-vs-keras-which-one-should-you-choose/>
2. <https://medium.com/implodinggradients/tensorflow-or-keras-which-one-should-i-learn-5dd7fa3f9ca0>
3. <https://www.pyimagesearch.com/2019/10/21/keras-vs-tf-keras-whats-the-difference-in-tensorflow-2-0/>
4. <https://www.youtube.com/watch?v=Epn3ryqr-F8>