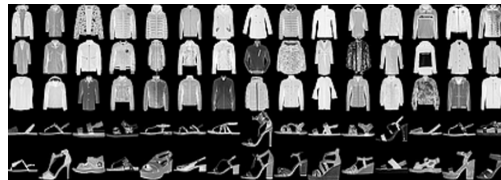


- **Topic name:** PyTorch Machine Learning Library for Python
- **Individual:** Dieu My Nguyen
- **Outline of full presentation content:**
 - Python: A (very) brief introduction
 - * An interpreted, high-level, general-purpose programming language.
 - * Created by Guido van Rossum, first release: 1991, current version: 3.7.2
 - * Design philosophy emphasizes code readability
 - * Supports multiple programming paradigms: object-oriented, imperative, functional and procedural
 - Object-oriented programming in Python
 - * Classes and objects
 - * Fields and methods
 - * The `self`: Equivalent of `this` in Java
 - * The `__init__` method
 - * Class and object variables
 - * Code example of class and inheritance
 - Deep learning: A brief introduction
 - * Neural networks
 - * Endless application areas
 - Some machine learning (ML) libraries in Python
 - * Essentials for data processing and math: NumPy, SciPy, matplotlib...
 - * Scikit-learn: for classical ML algorithms
 - * Keras: high-level neural network API
 - * Tensorflow: for numerical computation using data flow graphs (basically for neural networks)
 - * PyTorch
 - Deep dive into PyTorch
 - * History: Torch (Lua)
 - Historical facts
 - Core concepts
 - Overview of object-oriented aspects
 - * History: PyTorch
 - Historical facts
 - Core concepts
 - Overview of object-oriented aspects

- * Major elements of PyTorch:
 - PyTorch tensors
 - Mathematical operations
 - `torch.autograd` module for automatic differentiation
 - `torch.optim` module for optimization algorithms
 - `torch.nn` module for defining neural network
- Code example: An image classifier in PyTorch
 - * The data: Fashion MNIST dataset
 - * The model: Convolutional neural network (CNN)
 - * Imports and essential hyperparameters
 - * Data loading
 - * The CNN
 - * Training the model
 - * Evaluating the model
 - * Visualizing the loss
 - * Visualizing the filters

Intended code examples content and languages/tools/libraries to be used:

- Example of classes in Python
- Example of PyTorch tensors and numpy-like operations
- Example PyTorch workflow for building a CNN for image classification using the Fashion-MNIST dataset



Source: [Fashion-MNIST dataset](#)

Any target literature or web citations identified to date:

Literature:

- [Torch: a modular machine learning software library](#)
- [Comparative Study of Caffe, Neon, Theano, and Torch for Deep Learning](#)
- [Introduction to PyTorch](#)
- [Automatic differentiation in PyTorch](#)

Web:

- [deeplizard PyTorch course](#)
- [Fashion-MNIST image classification tutorial](#)