

Machine Learning In Python

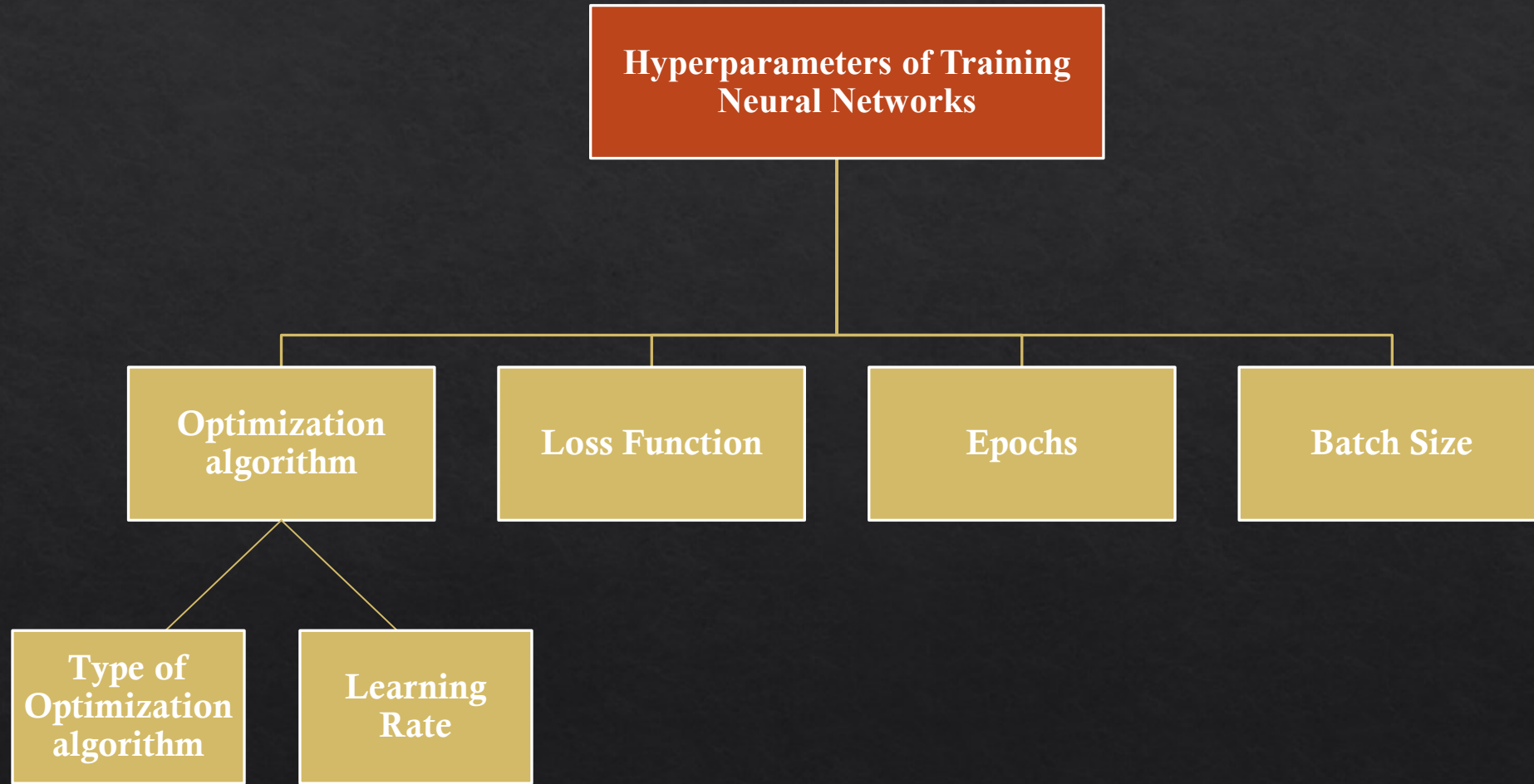
Subject: Artificial Neural Network

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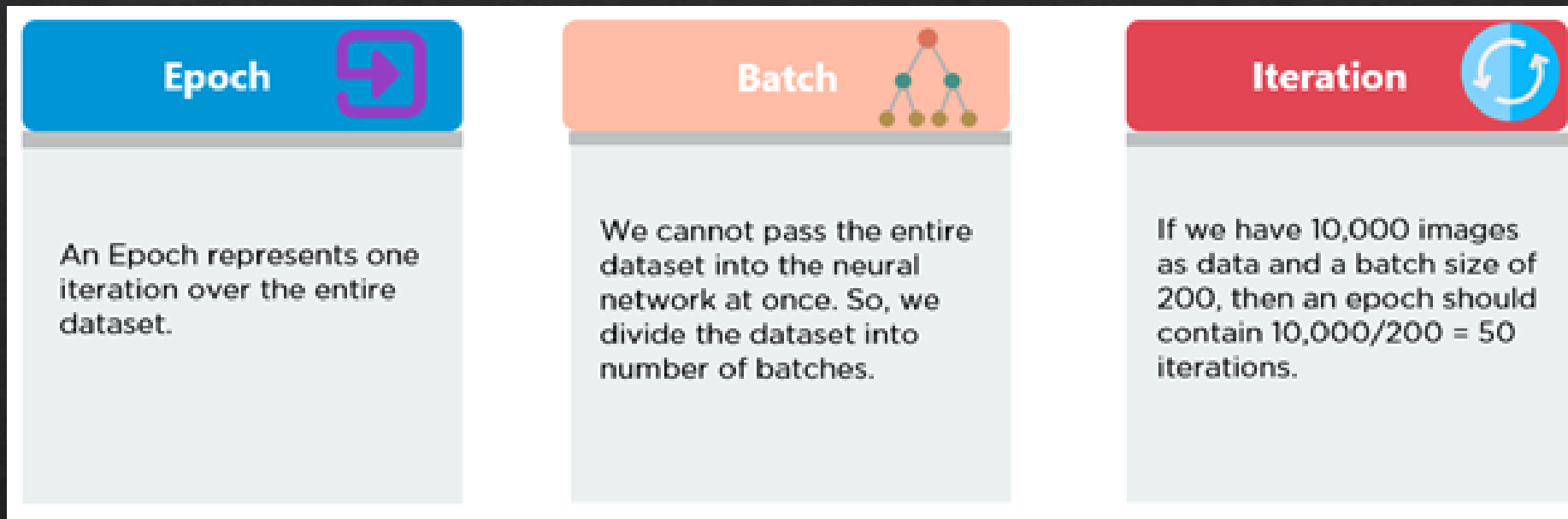
Hamedan University of Technology

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Artificial Neural Network



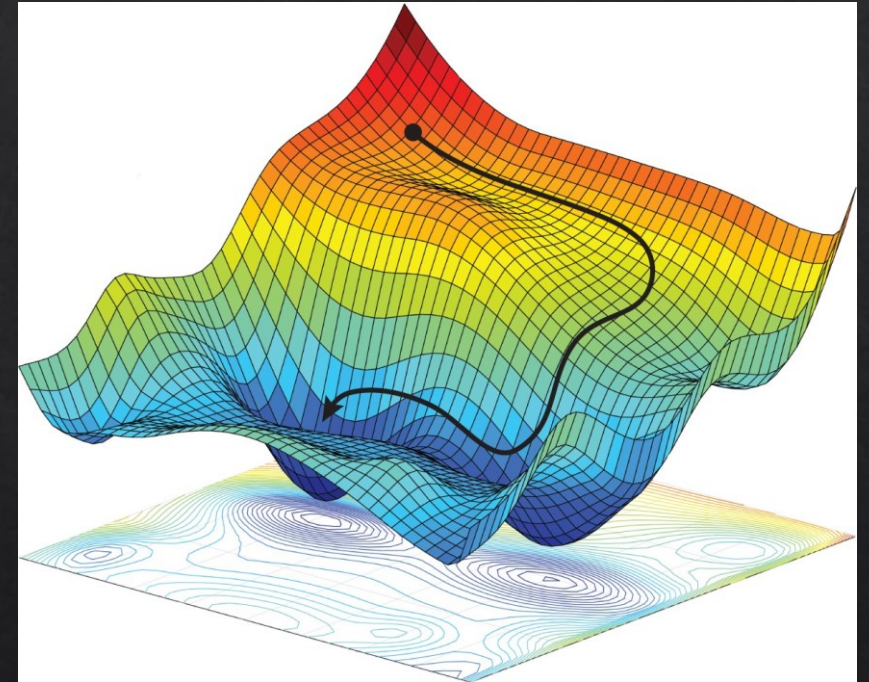
Epoch and Batch



- Epochs: The number of iteration that the entire training dataset is applied to the model.
- Batch size: The number of training samples in one epoch applying.

Optimization Algorithm

- Optimization algorithms optimize the value of weights in a neural network
- There are various optimization algorithms for neural networks
 - Common Optimizing Algorithm: Stochastic Gradient Descent (SGD)
 - Adam
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- Learning rate: It determines the step size of adjusting weights



Loss Function

- Loss Function calculates the difference between the output of the model and the target matrix (Label Matrix)
 - Common Loss Function for Regression Problems: Mean Square Error (MSE)
 - Common Loss Function for Classification Problems: Cross-entropy

$$L = -\frac{1}{n} \sum_{i=1}^n y_i \cdot \log(\hat{y}_i)$$

Cross-entropy

$$MSE = \frac{1}{n} \sum_{i=1}^n (y_i - \hat{y}_i)^2$$

MSE