

# Untitled

May 19, 2021

## 1 Deep Learning with TensorFlow

### 1.0.1 1. Linear Algebra

- Vectors, Matrices and Tensors
- Matrix operations
- Inverse of a matrix
- Eigenvalue and eigenvector

### 1.0.2 2. Probability Theory

- Random variable
- Probability distribution
- Conditional Probability and Chain rule for conditional probability
- Expectation and Variance
- Bayes rule
- Continuous variables, e.g., Gaussian.

### 1.0.3 3. Calculus

- Limit and derivative
- Chain rule
- Jacobian
- Matrix derivatives

### 1.0.4 4. Perceptron

- Logistic regression
- Comparison with Bayes Classifier

### 1.0.5 5. Multi Layer Perceptron

- Definition of Deep Network
- Architecture
- UAT

#### **1.0.6 6. Gradient Descent**

#### **1.0.7 7. Backpropagation**

- Backpropagation
- Stochastic and Minibatch Gradient Descent

#### **1.0.8 8. Test Sets, Validation Sets, and Overfitting**

#### **1.0.9 9. Convolutional Neural Networks**

- Convolution
- Pooling
- Max pooling
- Full Architecture

#### **1.0.10 10. TensorFlow I**

- Comparison with other libraries
- Installing
- Variables in TensorFlow
- Tensorflow operations
- Placeholder tensors

#### **1.0.11 11. TensorFlow II**

- Sessions in TensorFlow
- Navigating Variable Scopes and Sharing Variables.
- Specifying the Logistic Regression Model in TensorFlow
- Logging and Training the Logistic Regression Model in TensorFlow.

#### **1.0.12 12. Project: Building Multilayer Neural Networks with TensorFlow**

#### **1.0.13 13. Project: Building a Convolutional Neural Network with TensorFlow**

#### **1.0.14 14. Lab for the Final Project.**

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