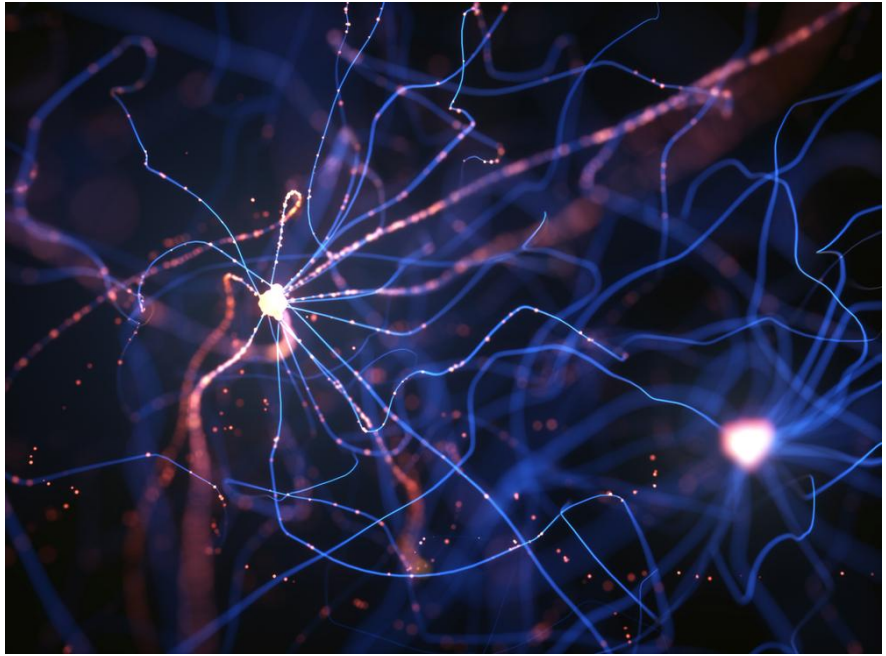
Fundamentals of Deep Learning



Analytics Vidhya
Learn everything about analytics

Overview of the Course

Overview of the Course

Basics of
Neural Network

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Basics of Neural Network

Topics to be covered

- Basics of Neural Network

Basics of Neural Network

Topics to be covered

- Basics of Neural Network
  - Weights and biases
  - Forward Prop
  - Backward Prop
  - Activation Function
  - Gradient Descent

Basics of Neural Network

Topics to be covered

- Basics of Neural Network
  - Weights and biases
  - Forward Prop
  - Backward Prop
  - Activation Function
  - Gradient Descent
- Understand the working mathematically

Basics of Neural Network

Topics to be covered

- Basics of Neural Network
  - Weights and biases
  - Forward Prop
  - Backward Prop
  - Activation Function
  - Gradient Descent
- Understand the working mathematically
- Implementation from scratch using numpy

Basics of Neural Network

Topics to be covered

- Basics of Neural Network
  - Weights and biases
  - Forward Prop
  - Backward Prop
  - Activation Function
  - Gradient Descent
- Understand the working mathematically
- Implementation from scratch using numpy
- Also cover details of
  - Activation functions and its types
  - Gradient Descent and its variants
  - Loss functions

Basics of Neural Network

- Project - Loan Prediction

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Overview of the Course

Handling Image Data

Topics to be covered

- How are images stored?

Handling Image Data

Topics to be covered

- How are images stored?
- Various image formats

Handling Image Data

Topics to be covered

- How are images stored?
- Various image formats
- Reading images and image data manipulation

Handling Image Data

Topics to be covered

- How are images stored?
- Various image formats
- Reading images and image data manipulation
- Apply Neural Networks to work on Image Data

Handling Image Data

Project - Emergency Classification problem

Assignment - Gender Classification

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Overview of the Course

Keras

Topics to be covered

- Overview of Deep Learning frameworks

Keras

Topics to be covered

- Overview of Deep Learning frameworks
- Cover Deep Learning algorithms with Keras throughout the course

Overview of the Course

Improving Model Performance

Topics to be covered

- Hyperparameter tuning

Improving Model Performance

Topics to be covered

- Hyperparameter tuning
- Early stopping

Improving Model Performance

Topics to be covered

- Hyperparameter tuning
- Early stopping
- Dropout

Improving Model Performance

Topics to be covered

- Hyperparameter tuning
- Early stopping
- Dropout
- Handling common problems like vanishing and exploding gradients

Improving Model Performance

Topics to be covered

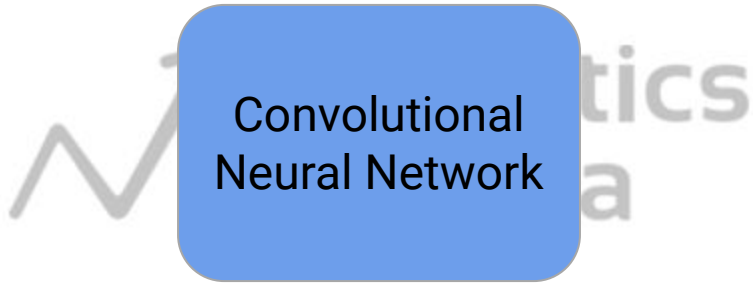
- Hyperparameter tuning
- Early stopping
- Dropout
- Handling common problems like vanishing and exploding gradients
- BatchNorm

Improving Model Performance

Topics to be covered

- Hyperparameter tuning
- Early stopping
- Dropout
- Handling common problems like vanishing and exploding gradients
- BatchNorm
- Image Data Augmentation

Overview of the Course



Convolutional Neural Network

Topics to be covered

- Basics of CNN

Convolutional Neural Network

Topics to be covered

- Basics of CNN
- How filters work in CNN

Convolutional Neural Network

Topics to be covered

- Basics of CNN
- How filters work in CNN
- Pooling

Convolutional Neural Network

Topics to be covered

- Basics of CNN
- How filters work in CNN
- Pooling
- Forward and Backward Prop

Convolutional Neural Network

Topics to be covered

- Basics of CNN
- How filters work in CNN
- Pooling
- Forward and Backward Prop
- Hyperparameter tuning

Convolutional Neural Network

Topics to be covered

- Basics of CNN
- How filters work in CNN
- Pooling
- Forward and Backward Prop
- Hyperparameter tuning
- Advanced techniques like transfer learning and fine tuning

Convolutional Neural Network

Topics to be covered

- Basics of CNN
- How filters work in CNN
- Pooling
- Forward and Backward Prop
- Hyperparameter tuning
- Advanced techniques like transfer learning and fine tuning
- Neural Network Visualization (to check if the model is performing correctly)

Overview of the Course

Working with Text Data

Topics to be covered

- Reading text data

Working with Text Data

Topics to be covered

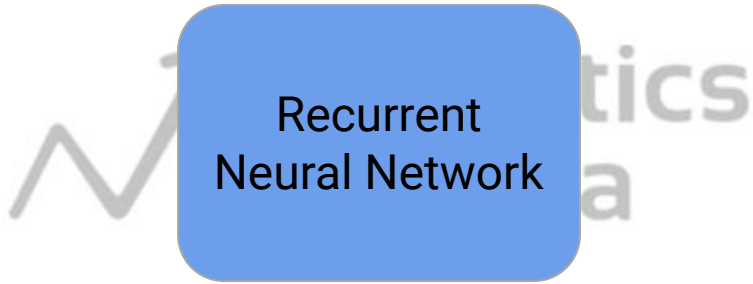
- Reading text data
- Text data Pre-processing

Working with Text Data

Topics to be covered

- Reading text data
- Text data Pre-processing
- Text data Representation

Overview of the Course



Recurrent Neural Network

Topics to be covered

- RNN for Sequential data

Recurrent Neural Network

Topics to be covered

- RNN for Sequential data
- How is RNN different?

Recurrent Neural Network

Topics to be covered

- RNN for Sequential data
- How is RNN different?
- Forward and Backward Prop in RNN

Recurrent Neural Network

Topics to be covered

- RNN for Sequential data
- How is RNN different?
- Forward and Backward Prop in RNN
- Complex algorithms like LSTM and GRU which are enhanced versions of RNN

Recurrent Neural Network

Topics to be covered

- RNN for Sequential data
- How is RNN different?
- Forward and Backward Prop in RNN
- Complex algorithms like LSTM and GRU which are enhanced versions of RNN
- Hyperparameter tuning

Recurrent Neural Network

Projects - Auto Tagging, Web Traffic Forecasting

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Overview of the Course

Handling Audio Data

Topics to be covered

- Basics of Audio Signal

Handling Audio Data

Topics to be covered

- Basics of Audio Signal
- Audio Data preparation

Handling Audio Data

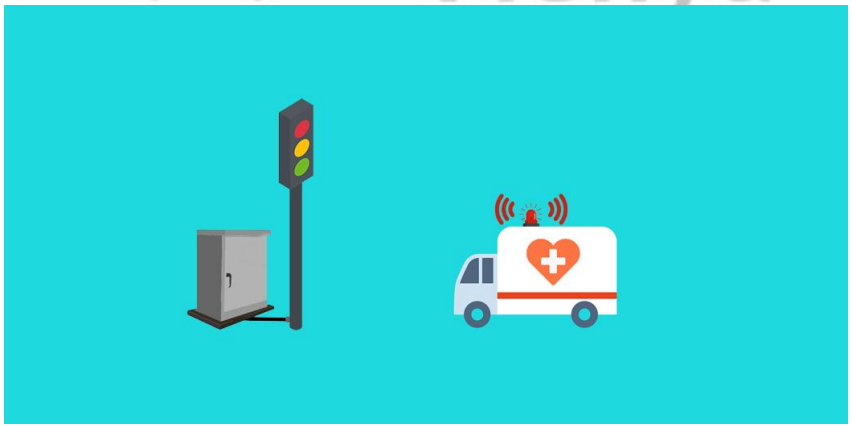
Topics to be covered

- Basics of Audio Signal
- Audio Data preparation
- Audio Data representation

Handling Audio Data

Topics to be covered

- Basics of Audio Signal
- Audio Data preparation
- Audio Data representation
- Project: Emergency Vehicle Audio Classification



Overview of the Course

Unsupervised Deep Learning

Topics to be covered

- What is Unsupervised Learning?

Unsupervised Deep Learning

Topics to be covered

- What is Unsupervised Learning?
- How to solve these problems using Deep learning?

Unsupervised Deep Learning

Topics to be covered

- What is Unsupervised Learning?
- How to solve these problems using Deep learning?
- Learn about specialized deep learning algorithms called autoencoders

Unsupervised Deep Learning

Project - Photo Gallery Organization problem

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Overview of the Course

PyTorch

Topics to be covered

- Understanding basics of PyTorch

PyTorch

Topics to be covered

- Understanding basics of PyTorch
- Implement Neural Network architectures in Pytorch
  - MLP
  - CNN
  - RNN, LSTM

Overview of the Course

Basics of Neural Network	Handling Image Data	Keras	Improving Model Performance	Convolutional Neural Network
Working with Text Data	Recurrent Neural Network	Handling Audio Data	Unsupervised Deep Learning	PyTorch

Thank You