DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

- by Prasad

PYTHON PROGRAMMING

STATISTICS AND PROBABILITY

1. UNDERSTANDING THE DATA

2. PROBABILITY DISTRIBUTIONS

3. SAMPLING DISTRIBUTIONS

4. HYPOTHESIS TESTING

5. ASSOCIATION BETWEEN CATEGORICAL VARIABLES

6. ANOVA ANALYSIS

DATA SCIENCE & AI

- INTRODUCTION TO DATA SCIENCE
- WHAT IS DATA
- PYTHON LIBRARIES FOR DATA SCIENCE

INTRODUCTION TO DATA SCIENCE

- WHAT EXACTLY DATA SCIENCE IS
- ARTIFICIAL INTELLIGENCE VS DATA SCIENCE VS BIG DATA
- DATA ANALYST VS DATA SCIENTIST VS BIG DATA ENGINEER VS MACHINE LEARNING ENGINEER
- WHY DATASCIENTISTS ARE IN DEMAND
- WHAT IS DATA PRODUCT
- NEED FOR DATASCIENTIST
- FOUNDATIONS OF DATASCIENCE
- DATA SCIENCE PROJECT LIFE CYCLE AND STAGES
- WHAT IS BUSINESS INTELLIGENCE
- WHAT IS DATA ANALYSIS
- WHAT IS DATA MINING
- WHAT IS MACHINE LEARNING
- ANALYTICS VS DATACIENCE
- ANALYTICS PROJECT LIFE CYCLE
- BIG DATA
- DATA SCIENCE DEEP DIVE

WHAT IS DATA

- ◆ BASICS OF DATA CATEGORIZATION
- ◆ TYPES OF DATA
- ◆ DATA COLLECTION TYPES
- ◆ DIFFERENT CONCEPTS OF DATA
- ◆ FORMS OF DATA AND SOURCES
- ◆ DATA FORMATS
- ◆ DATA QUANTITY
- ◆ DATA QUALITY
- ◆ DATA TRANSFORMATION
- ◆ FILE FORMAT CONVERSIONS
- ◆ DATA QUALITY AND CHANGES
- ◆ DATA QUALITY ISSUES
- ◆ DATA QUALITY STORY
- ◆ WHAT IS DATA ARCHITECTURE
- ◆ COMPONENTS OF DATA ARCHITECTURE
- ◆ OLTP VS OLAP
- ◆ HOW IS DATA STORED

PYTHON LIBRARIES FOR DATA SCIENCE

- ◆ PANDAS
- ◆ NUMPY
- ◆ SKLEARN
- ◆ SCIPY
- ◆ PLOTLY
- ◆ MATPLOTLIB AND SEABORN
- ◆ KERAS
- ◆ TENSORFLOW
- ◆ PYTORCH
- ◆ NLTK
- ◆ SPACY

MACHINE LEARNING

- ◆ MACHINE LEARNING FUNDAMENTALS
- ◆ UNDERSTANDING SUPERVISED AND UNSUPERVISED LEARNING TECHNIQUES
- ◆ CLUSTERING
- ◆ IMPLEMENTATION OF ASSOCIATION RULE
- ◆ UNDERSTANDING THE PROCESS FLOW OF SUPERVISED LEARNING TECHNIQUE
- ◆ LINEAR REGRESSION
- ◆ MULTI LINEAR REGRESSION

- ◆ POLYNOMIAL LINEAR REGRESSION
- ◆ LOGISTIC REGRESSION
- ◆ DECISION TREE
- ◆ RANDOM FOREST
- ◆ SUPPORT VECTOR MACHINES
- ◆ K NEAREST NEIGHBOUR
- ◆ XG BOOST
- ◆ ADA BOOST
- ◆ BAGGING CLASSIFIER
- ◆ VOTING CLASSIFIER
- ◆ NAIVE BAYS CLASSIFIER
- ◆ FEATURE ENGINEERING
- ◆ TEXT MINING
- ◆ SENTIMENT ANALYSIS
- ◆ TIME SERIES ANALYSIS
- ◆ NATURAL LANGUAGE PROCESSING
- ◆ RECOMMENDATION SYSTEMS
- ◆ COMPUTER VISION
- ◆ DEEP LEARNING
- ◆ PYSPARK IN MACHINE LEARNING

MACHINE LEARNING ALGORITHMS IN PYTHON
- ◆ STUDYING VARIOUS ALGORITHMS THEORITICALLY AND PROGRAMATICALLY
- ◆ APPLYING DIFFERENT ALGORITHMS TO DIFFERENT DATASETS

FEATURE SELECTION AND PROCESSING
- ◆ HOW TO SELECT THE RIGHT DATA
- ◆ FEATURE SELECTION TECHNIQUES
- ◆ PREPROCESSING INTRODUCTION
- ◆ NORMALIZATION TECHNIQUES
- ◆ SCALING TECHNIQUES
- ◆ REGULARISATION TECHNIQUES
- ◆ STANDARDIZATION TECHNIQUES
- ◆ PRINCIPLE COMPONENT ANALYSIS
- ◆ SINGULAR VALUE DECOMPOSITION
- ◆ LINEAR DISCRIMINATE ANALYSIS
- ◆ GRADIENT DESCENT CONCEPTS

MODEL SELECTION CROSS VALIDATION
- ◆ INTRODUCTION TO MODEL TUNING

- PARAMETER TUNING GRID SEARCHCV
- SELECTING THE BEST ALGORITHM

DEEP LEARNING

- MACHINE LEARNING VS DEEP LEARNING
- BASICS OF BIOLOGICAL NEURON
- BASICS OF ARTIFICIAL NEURON
- PERCEPTRON
- WHAT IS NEURON
- WHAT IS INPUT LAYER
- WHAT IS HIDDEN LAYER
- WHAT IS OUTPUT LAYER
- WHAT IS FULLY CONNECTED NETWORK
- LINERA FUNCTIONS
- NON LINEAR FUNCTIONS
- ACTIVATION FUNCTIONS
- LOSS FUNCTIONS
- OPTIMIZERS
- GRADIENT
- GRADIENT DESCENT
- STOCHASTIC GRADIENT DESCENT
- COST FUNCTION
- PROBLEMS OF GRADIENT DESCENT
- FORWARD PROPAGATION
- BACKWORD PROPAGATION
- HOW TO TRAIN NEURAL NETWORK
- HOW TO VALIDATE A NEURAL NETWORK
- CONCEPTS OF OVERFITTING AND UNDERFITTING

DEEP LEARNING ALGORITHMS

- ARTIFICIALNEURAL NETWORK
- CONVOLUTION NEUAL NETWORK
- RECORRUNT NEURAL NETWORK
- LSTM

TRANSFER LEARNING

- INTRODUCTION
- ALGORITHMS
- DATA AUGMENTATION TECHNIQUES

TIME SERIES ANALYSIS

- DESCRIBE TIME SERIES DATA
- DIFFERENT CONCEPTS OF TIME SERIES DATA
- IMPLEMENT MODEL FOR FORECASTING
- SEASONALITY TREND RESIDUAL
- STATIONARITY AND NON STATINARITY
- AUGMENTED DICKY FULLER TEST
- P-VALUE ANALYSIS
- DIFFERENCING AND INTEGRATING
- ARIMA MODEL
- SARIMA MODEL
- S P D Q VALUES
- AUTO CORRELATION PARTIAL AUTO CORRELATION PLOTS

RECOMMENDATION SYSTEMS

- COLLABORATIVE FILTERING
  - A. MODEL BASED
  - B.MEMORY BASED
- CONTENT BASED FILTERING
- SIMILARITY BASED FILTERING
  - A. USER-USER FILTERING
  - B. ITEM-ITEM BASED FILTERING
- MATRIX FACTORIZATION
- HYBRID FILTERING
- COSINE SIMILARITY
- PERSONS CORRELATION

NATURAL LANGUAGE PROCESSING

- INTRODUCTION
- TEXT NORMALIZATION,
- EDIT DISTANT
- LANGUAGE MODELLING WITH N GRAMS
- NAIVE BAYES CLASSIFICATION AND SENTIMENT(NLP + ML)
- LOGISTIC REGRESSION(NLP + ML)
- VECTOR SEMANTICS AND EMBEDDINGS
- NEURAL NETS AND NEURAL LANGUAGE MODELS(NLP + DL)
- PART-OF-SPEECH TAGGING
- SEQUENCE PROCESSING WITH RECURRENT NETWORKS

- ENCODER-DECODER MODELS, ATTENTION, AND CONTEXTUAL EMBEDDINGS
- CONSTITUENCY GRAMMARS
- CONSTITUENCY PARSING
- STATISTICAL CONSTITUENCY PARSING
- DEPENDENCY PARSING
- LOGICAL REPRESENTATIONS OF SENTENCE MEANING
- COMPUTATIONAL SEMANTICS AND SEMANTIC PARSING
- INFORMATION EXTRACTION
- WORD SENSES AND WORDNET
- SEMANTIC ROLE LABELING AND ARGUMENT STRUCTURE
- LEXICONS FOR SENTIMENT, AFFECT, AND CONNOTATION
- COREFERENCE RESOLUTION
- DISCOURSE COHERENCE
- SUMMARIZATION
- QUESTION ANSWERING
- DIALOG SYSTEMS AND CHATBOTS
- PHONETICS
- SPEECH PROCESSING
- HIDDEN MARKOV MODELS
- LATENT DIRCHLET ALLOCATION

COMPUTER VISION

- IMAGE ENHANCEMENT
- IMAGE DENOISING
- TRANSFORMATIONS
- FILTERING, FOURIER AND WAVELET TRANSFORMS AND IMAGE COMPRESSION
- COLOR VISION
- FEATURE EXTRACTION
- POSE ESTIMATION
- REGISTRATION

GENERATIVE AI

- INTRODUCTION
- GENERATOR
- DISCRIMINATOR
- GANS AND ITS ARCHITECTURES
- APPLICATIONS

LARGE LANGUAGE MODELS
- INTRODUCTION

DATA SCIENCE AND AI CONCEPTS IN AWS
- INTRODUCTION
- BASIC SERVICES OF AWS
- BIG DATA AND AI RELATED SERVICES

DOCKER AND KUBERNETES
- INTRODUCTION
- DOCKER
- KUBERNETES AND KUBEFLOW

30 + PROJECT DISCUSSIONS ON ALL CONCEPTS OF DATASCIENCE

5+ REAL TIME DATASCIENCE TASKS DISCUSSION WHICH WERE ASKED DURING INTERVIEWS BY FORTUNE 5OO COMPANIES LIKE TCS WIPRO INFOSYS COGNIZANT DELLIOT HCL L&T CAPGEMNI RELIANCE INDUSTRIES BAJAJ FINSER BIRLASOFT ……………

We are folks who have worked solving business problems through technology. we have seen the business world and the technology world divided over problems.

In this ever-changing landscape, we would like to the point of convergence of interests and priorities between the two. Just like the computer has changed humans forever. Data Science & AI, Cloud computing, Big data and the Internet of things are going to change the way we live and do business.

Courses we are offering

DATA SCIENCE & AI

DEVOPS WITH AWS/AZURE

FULLSTACK PYTHON

FULLSTACK JAVA

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