TCR INNOVATION

ARTIFICIAL INTELLIGENCE

DECEMBER 10, 2021 | 6 MONTHS

INTERNSHIP PROGRAM

Mentor
Rishav Das

Visit Us:
tcrinnovation.co.in

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ABOUT US

OUR MOTTO

TCR Innovation stands for Technical Coding & Research Innovation and believes in bridging the gap between students and their knowledge in the industrial field & bringing them a step closer to their Dream.

TRENDING PROGRAMS

We conduct our Internship Programs based on the current trends and the need of the Industry. We provide Live 1:1 Training Sessions on Google Meet and also provide recordings for Life-Time. Get trained for industry.

INTERNSHIPS

Get first-hand exposure to working in the real world, build your professional network, integrate classroom knowledge and theory with practical application and skills developed in professional or community settings.

RESEARCH AND INNOVATION

Investment in discovering new technology and increasing the capacity of a firm involves brainstorming, ideation, product and development research, or similar techniques to tap into creative thinking and test concepts within the company and its market.

ALWAYS REMEMBER!

To educate students to become quality techno-crafts for taking up challenges in all facets of life

-MISSION, TCR Innovation

What we think?

Change is Inevitable and to be a part of this everchanging IT industry one must be ready with latest IT technologies and TCR innovation helps you in being updated and ready for the industry.

Before Registrations

Before being a part of any Internship Program OR any courses, an intern is given a free orientation where all the concept, design & method of the program are explained and also we show the projects the intern gets to work on and then the intern enroll's for the Internship-Training Program or courses.

What sets you apart from the competition?
The Non-technical skills that you learn with us!

The communication, networking, resume building, profiling, and social skills, etc. Growing your Github & Linkedin account which helps you in making your profile strong.We also take your Mock Interviews (Technical And HR Round both) so that you are prepared in advance before you sit for a real interview.

TCR INNOVATION

WHY SHOULD YOU JOIN TCR?

Interactive Learning

The world has changed a lot with the due course of time and with that our traditional learning methods have also changed, Interactive Learning is the future where the mentor is not monotonous but has its own way of fun & Interactive Learning where you will get knowledge in a more profound way.

Mentoring

To be the best version of yourself you need the best mentor who can help you carve your own journey. Mentors at TCR are experienced people and currently active members of the industry. We handpick the best available mentors for you so that you can focus more on learning and exploring.

Projects

We handpick the best projects for you, so that not only get theoretical knowledge and practical knowledge but along with that you get a hands-on experience on working on live projects. Projects also help to clear the conceptual knowledge you get and also are a integral part of your resumes and help you to stand-out from the crowd.

Self Development

Make yourself knowledgable and proficient in your domain is not enough this days due to drastic increase in the competition in the industry. As a candidate you need to have Leadership, Communication, Presentation, Social skills as well which will help you grow and get your desired spot in the industry, TCR will not only give you opportunities to develop those skills but help you in developing them as well.

ABOUT MENTOR

Rishav Das

Rishav Das is the Lead of Automation (Data Science & Artificial Intelligence) at Wipro. He has solved 60+ Research use cases, published 45+ Patents (received 23 grants) across various countries. He is also a Member of the Advisory Council at Indika AI.

Expertised in below skills:

Artificial Intelligence:

Machine Learning | Deep Learning | NLP/NLU/NLG | CV | HMI | Time Series Modeling | Fuzzy Logic | Expert Systems | Recommendation Systems | Cognitive Computing | Feature Engineering | Predictive Analytics | Robotic Process Automation

Big Data:

Hadoop, HDFS, MapReduce, Apache Spark, Pig, HBASE, Hive, Flume, Zoo Keeper, Yarn, Mahout, Oozie, Data Warehouse(Openstack), Data Mining, SQL, MongoDB, Cassendra, NoSQL, GraphQL.
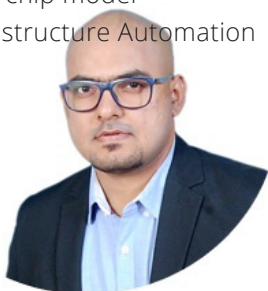
IT Infrastructure (Data Storage & DevOps):

System Engineering | Enterprise Storage System SAN/NAS | AWS | Azure | GCP | Jenkins | Jfrog | SonarQube | Docker | Kubernetes | Ansible

Programming: Python(Expert), Core Java, R, JavaScript, React Native(Beginner)

Innovation & Research:

Worked in 60+ Research use cases, published 46+ Patents (received 23 Grants) across countries.
Neural chip model
IT Infrastructure Automation

Rishav Das
Senior Data Scientist

innovaccer

Alumni			Mentor	
wipro	BITS Pilani		TCR INNOVATION	THE UNIVERSITY OF TEXAS AT AUSTIN

Inventor					speaker	
INTELLECTUAL PROPERTY INDIA	UNITED STATES PATENT AND TRADEMARK OFFICE DEPARTMENT OF COMMERCE	European Patent Office	CNIPA China National Intellectual Property Administration		CII Confederation of Indian Industry 125 Years - Since 1895	

TCR
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SALIENT FEATURES OF
THIS INTERNSHIP PROGRAM

- 100+ Hours of Live Intensive Training

- 30+ Hours of Hands-on Assignments and Projects

- Career, Interview, Internship and Placement guidance

- Lifetime Access to Latest Content

- Learn from the Experts

- 24X7 Support through Discussion form

ARTIFICIAL INTELLIGENCE

AI IS THE NEW ELECTRICITY

"Artificial Intelligence, deep learning, machine learning—whatever you're doing if you don't understand it—learn it. Because otherwise you're going to be a dinosaur within 3 years." ~Mark Cuban

Artificial Intelligence is the simulation of the human process by machines (computer systems). These processes include the learning, reasoning, and self-correction. We need Artificial Intelligence (AI) because the work that we need to do is increasing day-to-day. So it's a good idea to automate the routine work.

Machine Learning is the core subarea of artificial intelligence. It makes computers get into a self-learning mode without explicit programming. When fed new data, these computers learn, grow, change, and develop by themselves.

Data science can be defined as a blend of mathematics, business acumen, tools, algorithms, and machine learning techniques, all of which help us in finding out the hidden insights or patterns from raw data which can be of major use in the formation of big business decisions.

Data is the new Oil. This statement shows how every modern IT system is driven by capturing, storing, and analyzing data for various needs. Be it about making decision for business, forecasting weather, studying protein structures in biology or designing a marketing campaign.
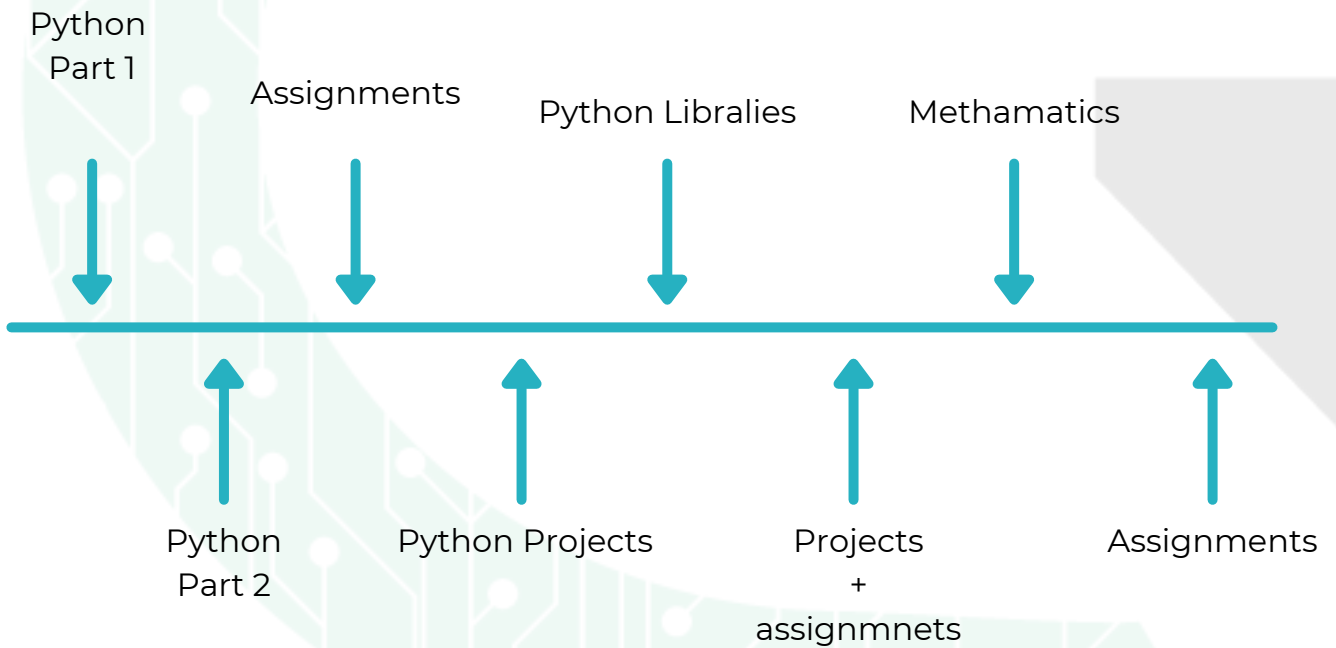
Perks:-
1. TRAINING COMPLETION CERTIFICATE
2. INTERNSHIP COMPLETION CERTIFICATE
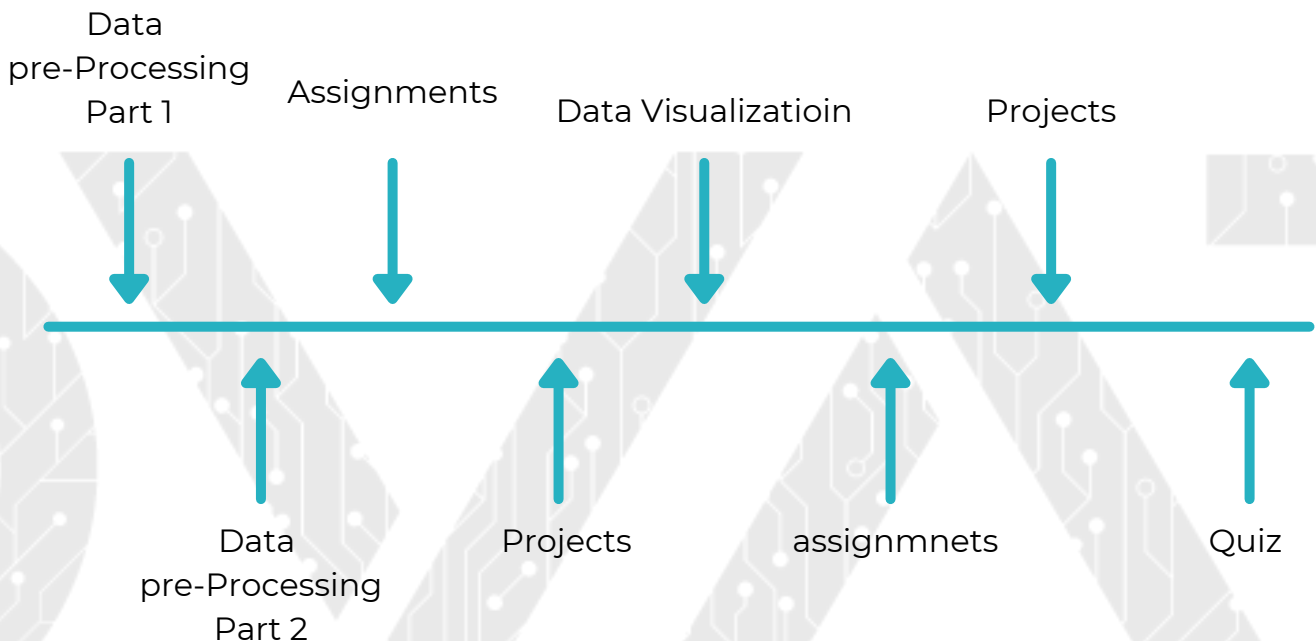3. LETTER OF RECOMMENDATION
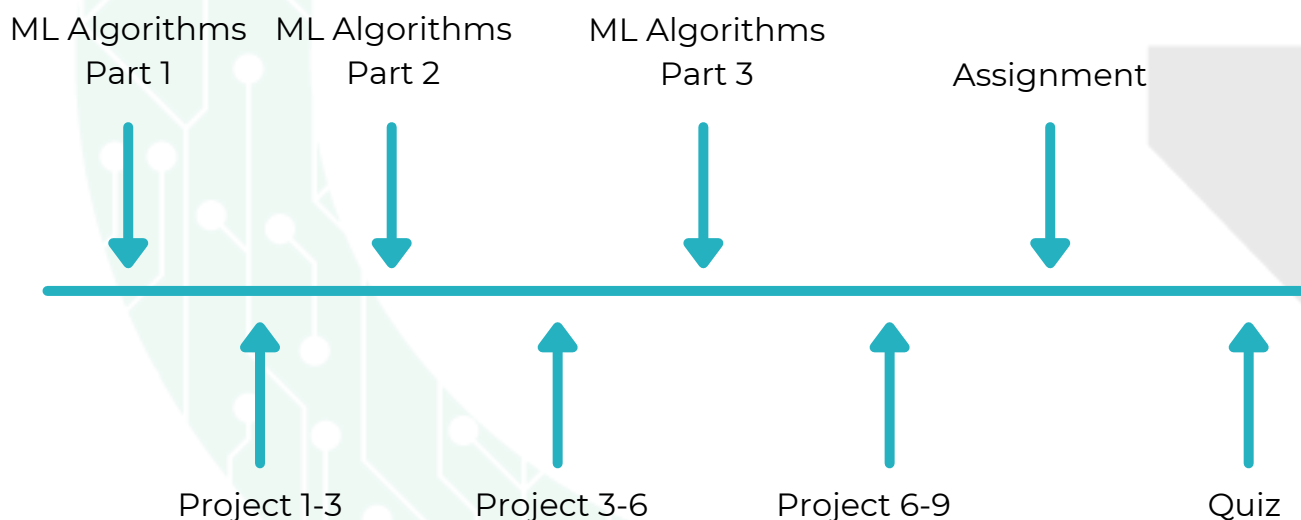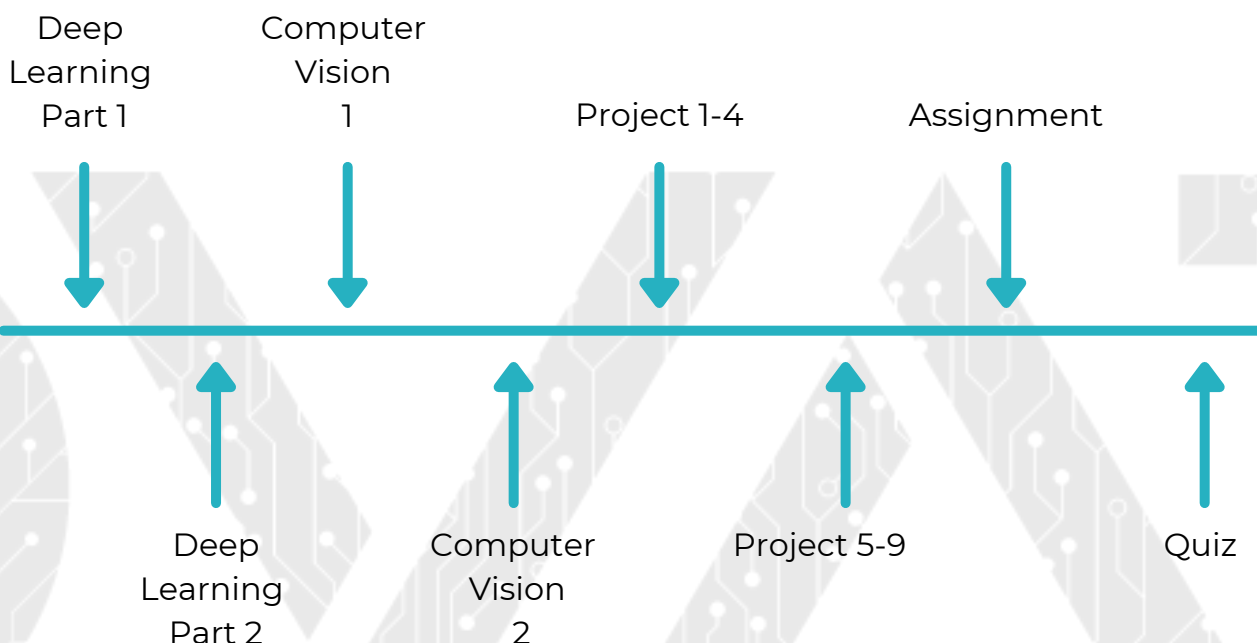4. AWARDS

ARTIFICIAL INTELLIGENCE

TRAINING PERIOD 1:-

Python Part 1

Assignments

Python Libralies

Methamatics

Python Part 2

Python Projects

Projects + assignmnets

Assignments

TRAINING PERIOD 2:-

Data pre-Processing Part 1

Assignments

Data Visualizatioin

Projects

Data pre-Processing Part 2

Projects

assignmnets

Quiz

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TRAINING PERIOD 3:-

ML Algorithms Part 1	ML Algorithms Part 2	ML Algorithms Part 3	Assignment
↓	↓	↓	↓

↑	↑	↑	↑
Project 1-3	Project 3-6	Project 6-9	Quiz

TRAINING PERIOD 4:-

Deep Learning Part 1	Computer Vision 1	Project 1-4	Assignment
↓	↓	↓	↓

↑	↑	↑	↑
Deep Learning Part 2	Computer Vision 2	Project 5-9	Quiz

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TRAINING PERIOD 5:-

Introduction to
Statistical NLP Techniques

Projects

Assignmets

quiz

Assignments

NLP- NLU
Delivery

Projects

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FLOW OF INTERNSHIP PROGRAM

INTERNSHIP PERIOD 1:-

Internship Project 1 - 2   Github   Quiz 2   Assignment

Internship Project 3 - 4   Report Writing   Technical Interview Questions   Quiz 3

INTERNSHIP PERIOD 2:-

Resume Building   HR Mock Interview   Task Submission

Technical Mock Interview   Linkedin
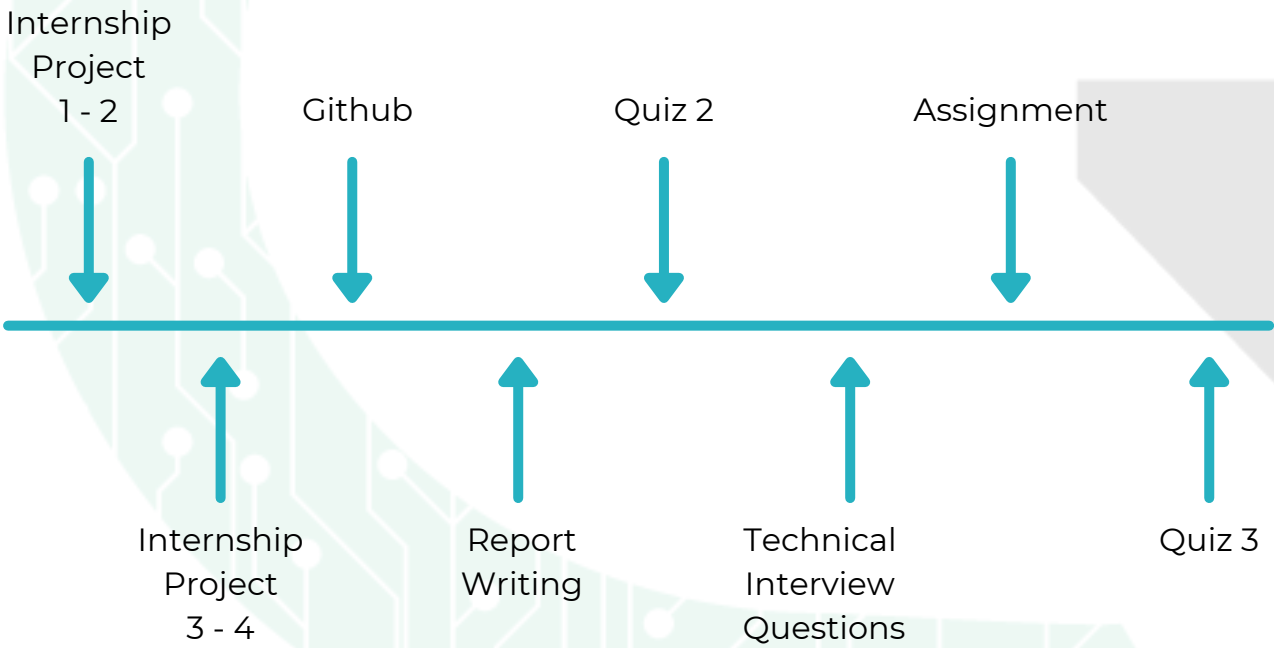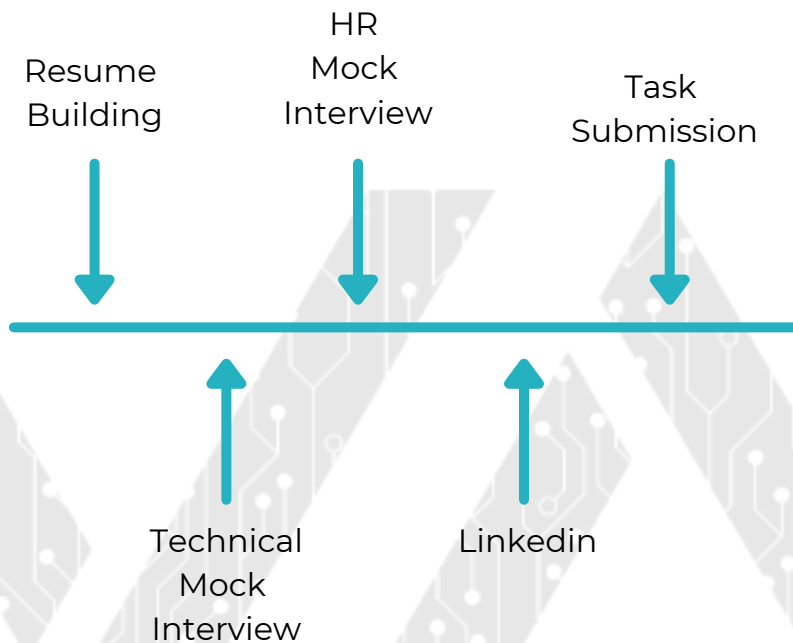
Python

- Installation - Anaconda, Pycharm, Virtualenv
- Introduction to python
- Basic Syntax, comments, Variables
- Data Types, Numbers, Casting, Strings,Booleans
- Operators,Lists,Tuples, Sets, Dictionaries
- If...Else, While Loops, For Loops
- Functions,Lambda,Arrays
- Arrays, Classes/Objects, Inheritance, Iterators
- Scope, Modules, Dates, Math, JSON
- PIP,Try...Except, User InputP, String Formatting
- File Handling, Read Files, Write/Create Files, Delete Files

Numpy

- Ndarray, Data types, Array Attributes, Indexing and Slicing
- Array manipulation, Binary operator, String Function
- Arithmetic, Statistical, Matrix, linear algebra, sort, search, countings

Pandas

- Data manipulation, Viewing, selection, grouping, merging, joining, concatenation
- Working with text data, visualization, CSV, XLSX,SQL data puling, operations

Scipy

- Statistics, Linear algebra, models, special fucntions, optimization
- Probability & Stats Applications

Probability

- Probability Basic Probability
- Random experiments
- conditional Probability
- Independent Events
- Bayes theorem,
- Permutation, combination
- Random variable,
- Discrete/Continous RV, PDF, PMF, CDF
- Joint Probability Distribution
- Conversion techniques
- EV, variance, SD
- Covariance, Correlation,
- Chebyshev Inequality, Law of Large number
- Central limit Theorem,
- Percent & Quantiles, Moments
- Skewness & Kurtosis
- Gaussian, Binomial
- Standard Normal
- Distribution
- Poisson,
- Multinomial,
- Hypergeometric,
- Uniform, Exponential Distribution

Statistics

- [Mean, median, mode](Sample/population)
- Expected values
- varience
- standard deviation
- Sampling distribution
- Frequency distribution
- Estimation Theory
- confidence interval
- Maximum Likelihood Estimation
- Hypothesis Testing - Chi Square
- Student's T
- F Distribution
- Z test
- Hypothesis Testing - Type-I, Type- II
- p Values
- Relationship between NULL & Alternative
- Least Sequare Methods - Numerical

Data Pre-Processing

- Data Cleaning - Handling Missing Values(Data Imputation)
- Dealing with Noisy data(Binning Technique)
- Advance Data cleaning - Will be referred while Regression
- clustering topics
- Data Transformation Techniques- Normalization (minmax, log transform, z-score transform etc.)
- Attribute Selection
- Discretization
- Concept Hierarchy Generation
- Data Reduction: Data Cube Aggregation
- Numerosity Reduction
- Dimentionality Reduction

Data Visualization

- Data Mapping, Charts, Glyphs, Parallel Coordinates, Stacked Graphs
- Bar, Pie, Line Charts, bubbles, geo maps. Gauge, whisker charts, Heatmaps, scatterplots, plottings images, videos, motion charts, perfoming EDA
- Building Dashboard - Live implemtation - PowerBI

Linear Regression

- Implemtation of Numerical intuitions
- Regression basics: Relationship between attributes using Covariance and Correlation
- Relationship between multiple variables: Regression (Linear, Multivariate) in prediction.
- Residual Analysis: Identifying significant features, feature reduction using AIC, multi-collinearity

Multiple Linear Regression

- Polynomial Regressio
- Regularization methods
- Lasso, Ridge and Elastic nets
- Categorical Variables in Regression

Non-Linear Regression

- Logit function and interpretation
- Types of error measures (ROCR)
- Logistic Regression in classification

Clustering

- Distance measures - euclidean distance
- Different clustering methods (Distance, Density, Hierarchical)
- Iterative distance-based clustering;
- Dealing with continuous, categorical values in K-Means
- Constructing a hierarchical cluster
- K-nearest neighbors, K-Medoids, k-Mode and density-based clustering
- BIRCH, DBSCAN, Mean Shift, Spectral Clustering, Gaussian Mixture Model

Association Rule mining

- The applications of Association Rule Mining: Market Basket, Recommendation Engines, etc.
- A mathematical model for association analysis; Large item sets; Association Rules
- Apriori: Constructs large item sets with mini sup by iterations; Analysis discovered association rules;
- Application examples; Association analysis vs. classification
- FP-trees
- PageRank

Classification

- Naïve Bayes Classifier: Model Assumptions, Probability estimation
- Required data processing,M-estimates, Feature selection: Mutual information
- Random Forest Algo + Implementation
- classication using Logistics, K nearest Neighbors
- Decision Trees : ID4, C4.5, CART
- Support Vector Machines: Linear learning machines and Kernel space, Making Kernels and working in feature space
- SVM for classification and regression problems.

Feature Engineering

- Feature Reduction/Dimensionality reduction
- Principal components analysis (Eigen values, Eigen vectors, Orthogonality)
- Validation Techniques (Cross-Validations)

Ensembles methods

- Bagging & boosting and its impact on bias and variance
- C5.0 boosting
- Gradient Boosting Machines and XGBoost

Neural Networks Using Tensorflow and Keras

- Basic Mathematics - DL
- Introduction to Perceptron & History of Neural networks
- Activation functions
  a. Sigmoid
  b. Relu
  c. Softmax
  d. Leaky Relu
  e. Tanh
  f. Exponential Linear Units (ELU)
  g. Swish
- Gradient Descent
- Learning Rate and tuning
- Optimization functions
- Introduction to Tensorflow
- Introduction to keras, theano, pytorch - handson
- Back propagation and chain rule
- Fully connected layer
- Cross entropy
- Weight Initialization

Working with images & CNN Building Blocks

- Regularization
- coding perceptron
- Q&A
- Working with Images_Introduction
- Working with Images - Digitization,
- Sampling, and Quantization
- Working with images - Filtering - OpenCV
- Hands-on Python Demo: Working with images
- Introduction to Convolutions
- 2D convolutions for Images
- Convolution - Backward - handson
- Transposed Convolution and Fully Connected Layer as a Convolution - handson
- Pooling: Max Pooling and Other pooling options - practical

CNN Architectures and Transfer Learning

- CNN Architectures and LeNet Case Study
- Case Study: AlexNet
- Case Study: ZFNet and VGGNet
- Case Study: GoogleNet
- Case Study: ResNet
- GPU vs CPU
- Transfer Learning Principles and Practice
- Hands-on Keras Demo: SVHN Transfer learning from MN dataset
- Transfer learning Visualization (run package, occlusion experiment)
- Hands-on demo -T-SNE
- Hands -on CNN nets
- Hands-On OCR, Face Recognition, Object Detection,
- Pose Estimation,
- 3D estimations

CNN's at Work - Semantic Segmentation

- CNNs at Work - Semantic Segmentation
- Semantic Segmentation process
- U-Net Architecture for Semantic Segmentation
- Hands-on demo - Semantic Segmentation using U-Net
- Other variants of Convolutions
- Inception and MobileNet models

Object Detection

- CNN's at Work - Object Detection with region proposals
- CNN's at Work - Object Detection with Yolo and SSD

CNN's at work- Siamese Network for Metric Learning

- Siamese Network as metric learning
- How to train a Neural Network in Siamese way
- Hands-on demo - Siamese Network

Introduction to Statistical NLP Techniques

- Introduction to NLP
- Preprocessing , NLP Tokenization ,stop words, normalization, stemming andlemmatization
- Preprocessing in NLP Bag of words ,TF-IDF as features
- Language model probabilistic models, n-gram model and channel model
- Hands on NLTK
- Word2vec
- Golve
- POS Tagger
- NER
- POS with NLTK
- Gensim
- TF-IDF with NLTK

NLP- NLU Delivery

- Introdcution to sequential models
- Introduction to RNN
- Intro to LSTM
- LSTM backprop through time
- Hands on keras LSTM
- Sentiment Analysis
- Sentence generation
- Machine translation
- Advanced LSTM structures
- Keras- Machine Translation
- Encoder decoder with attention
- Encoder Decoder - Auto Encoder
- Understanding transformers
- Attention Models Intuitions
- Introduction to BERT
- GPT
- Chatbot -handson

ADDITIONAL SKILLS
YOU WILL LEARN

Linkedin

Github

Improved communication skills

Interview cracking

Resume building

Leadership skills

TCR
INNOVATION

WHY SHOULD YOU REGISTER?

OutCome:-

You will get deep insights into AI algorithms. You can solve most of the research-based Usecase and real-time problems of the industry. You can work in any field, as AI is now adopted across Industry

What Positions you can apply for:-

You can apply for Deep Learning Engineer, Machine Learning Engineer, Data Engineer, Data Analyst, Data Scientists etc

How will TCR help you in getting this positions:-

We will help in the process of Interview Preparation and guide you in making a presentable resume even before you apply for a Job Posting. Prepare you to tackle all the Technical & Non-Technical Questions.

How will this benefit you in future:-

This program will also be beneficial for students/working professionals who plan to pursue further education in Msc, Mtech, ME, and MBA, etc as well. Because the skills you learn here will help you grow and secure a dream job even after you you complete your further education.

CERTIFICATE

Training Completion Certificate

Internship Certificate

Letter of recommendation

Appreciation certificate

Internship Program Registration

Duration of the internship program: 6 Months

How to Register & Fees:

Step 1: Attend the free orientation to get the detailed information about our internship program.

Step 2: Final Registration Form will be provided and fees will be disclosed in the orientation itself.

FINAL REGISTRATION FEES

Registration & Fees:

Amount: Rs 33,000/-

- If you are paying the amount One Time then you will receive an additional **5% Discount**.

- TCR Innovation will also be providing scholarships to the students based on merit, for that you have to submit your resume and SOP(Statement Of Purpose) drafted solely by yourself and after that, we will have one on one call/mail of short-listed candidates and they will get up to **10% Scholarship**.

- The intern who has successfully achieved a scholarship can get an additional 5% One Time Discount as well and then the total will be a **10% Scholarship + 5% Discount.**

- The interns who want to pay fees in parts can also do so by paying **Rs 500/- as registration fees** and then paying the remaining amount in 2 halves, First Payment will be done after the **First Training Session** and the **Second Payment** needs to be done in the **Third Week.**

- **Registration Fees is Rs 500/-** which is to filled by everyone, the amount Rs 33,000/- i**ncludes the registration fees.**

TCR INNOVATION

STUDENTS FROM TCR ARE WORKING IN FOLLOWING COMPANIES

WHERE TO FIND US?

Group Discounts are also available, write us a mail at tcrinnovation@tcrinnovation.co.in mentioning all the details such as group members name, contact detials, etc and TCR Team will definitely contact you.

🌐 Visit us at:https://tcrinnovation.co.in

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