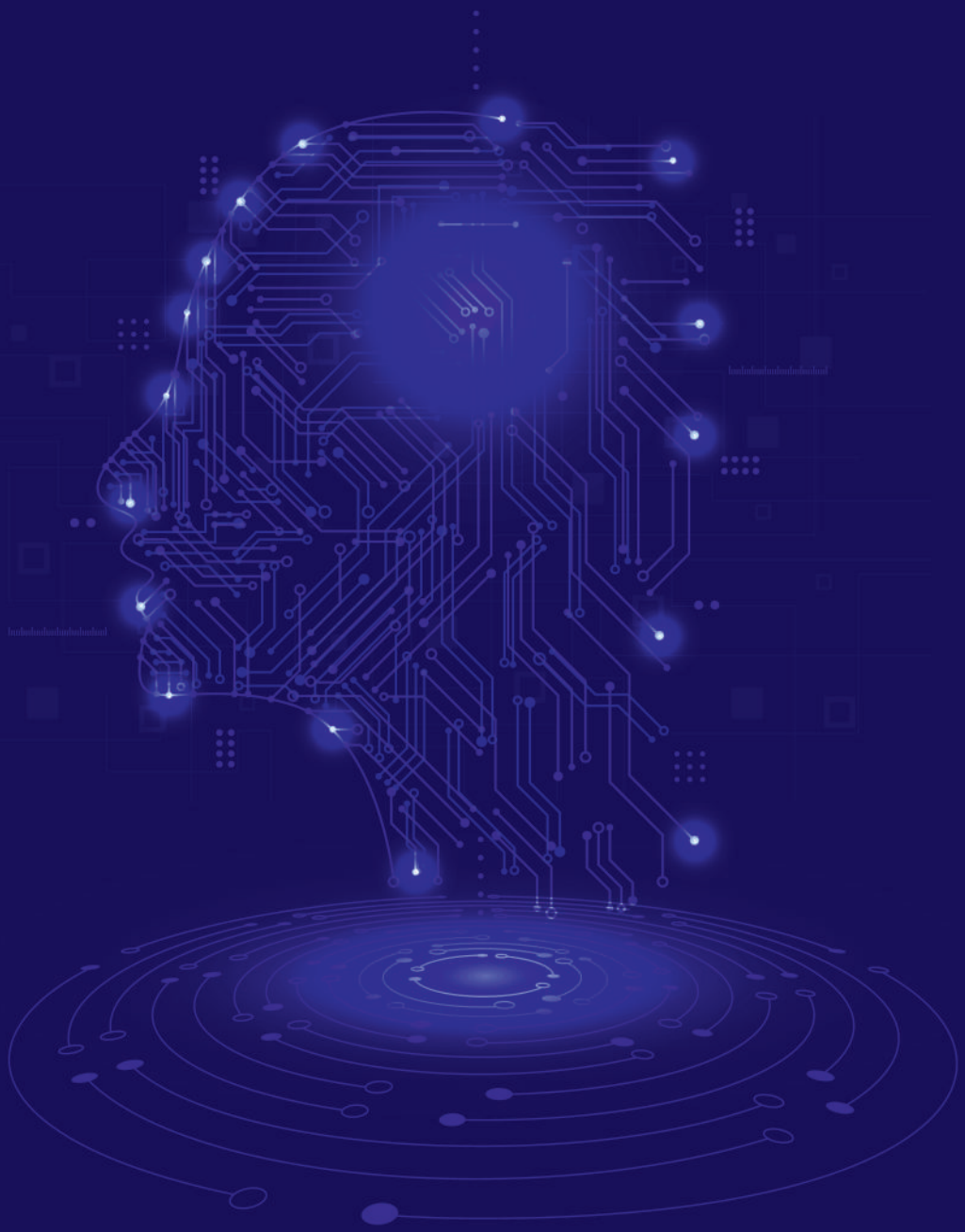
Quality Thought

Celebrating 16 Years

A gateway to Your Bright Future



Data Science with AI

98491 78009 | qualitythought.in | Madhapur

Foundations of Python for Data Science

- Python basics: variables, loops, functions, modules
- Working with files, error handling, virtual environments
- Popular DS libraries: NumPy, Pandas, Matplotlib, Seaborn
- Writing clean, readable, reusable code
- Mini Project: Data exploration on a small CSV (e.g., sales or healthcare)

Data Handling & Pre-processing

- Handling missing values, outliers, skewed data
- Encoding categorical data
- Scaling & normalization
- Feature engineering essentials
- Pandas groupby, merges, joins for real datasets

Exploratory Data Analysis (EDA)

- Statistical summaries
- Correlation, distribution analysis
- Visualization patterns for business insights
- Storytelling with graphs
- **Colab Activities:** Interactive plots with Plotly
- **Mini Project:** EDA report for a retail or healthcare dataset

Statistics & Probability for Data Science

- Descriptive & inferential statistics
- Probability distributions
- Hypothesis testing (t-test, chi-square, ANOVA)
- Confidence intervals
- Sampling methods
- **Mini Project:** Statistical analysis of A/B testing dataset

Machine Learning Fundamentals

- Train-test split, cross-validation
- Regression (Linear, Lasso, Ridge)
- Classification (Logistic, KNN, SVM)
- Model evaluation metrics
- Bias–variance, overfitting, underfitting
- Mini Project: Predict house prices / classify customer churn

Advanced Machine Learning

- Ensemble methods (Random Forest, XGBoost, AdaBoost)
- Feature importance analysis
- Hyperparameter tuning (GridSearchCV, RandomSearch)
- Pipelines and automation
- Mini Project: Build a high-performance ML model for tabular data

Unsupervised Learning

- K-Means, Hierarchical clustering
- DBSCAN
- Dimensionality reduction (PCA, t-SNE)
- Colab Activity: Visual cluster plots
- Mini Project: Customer segmentation analysis

Deep Learning & Neural Networks

- Neural network basics (perceptron, activation, loss)
- Using TensorFlow/Keras in Colab
- CNN basics for image data
- RNN/LSTM basics for sequence data
- Transfer learning
- Mini Project: Image classifier using pre-trained models

Applied AI & Large Language Models

- Introduction to LLMs (GPT, Gemini, LLaMA)
- Prompt engineering
- Using open-source models in Colab (HuggingFace)
- Vector embeddings & semantic search
- Building simple AI assistants
- Mini Project: Build a text-based chatbot using an open LLM

Quality Thought

Our Students Are Placed In

TCS · vsoft · Cognizant · Microsoft · ENVISION · Sunseaz Technologies Pvt Ltd · wipro · AVSOFT · amazon

PrimeSoft · statista · Practera · PIERSOFT · HELLTON TECH · Capgemini · KENSIUM · SOLIX · sumtotal · MIRABEL TECHNOLOGIES

VALUEMOMENTUM · PERVACIO · Apollo · LARSEN & TOUBRO · STIC Soft · Advi · NOOR · servicenow · ValueLabs · erwin

CyberTech · BLACK KNIGHT · Micron · highradius · HEXAWARE · NextSphere · GLOBAL · splashBI · archents · techforce.ai

Nendrasys · magnasoft · Innominds · Powering the Digital Next · High Noon Consulting · JRD SYSTEMS · Medtronic · MAXO · PTW · Uber · techolution

SOLUGENIX · Collabera · iPrism Technologies · meslova · actlogica · S&P Global · FISSION · SOLIGENIX · TechnoFacts · SAHASYA

Quality Thought

98491 78009

Quality Thought Infosystems India (P) Ltd.

Plot No:850, Road, No: 45, 100 Feet Rd, Ayyappa Society, Madhapur, Hyderabad, Telangana 500081