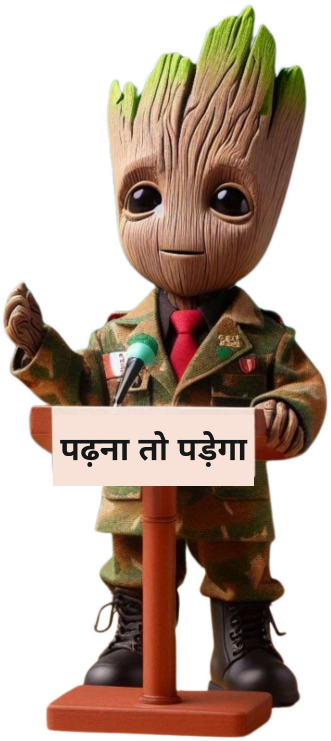
Certification in DATA SCIENCE

Groot Academy
Build your world through Creativity

Groot Academy

About Groot

Groot Academy, founded in 2002 and based in Jaipur, is more than just an IT training institute. We are a comprehensive skill development and startup incubation center, offering a range of programs designed to equip individuals with the skills they need to thrive in today's competitive world. With a focus on both technical education and entrepreneurship, we prepare our students not only for jobs but also to create and lead successful businesses.

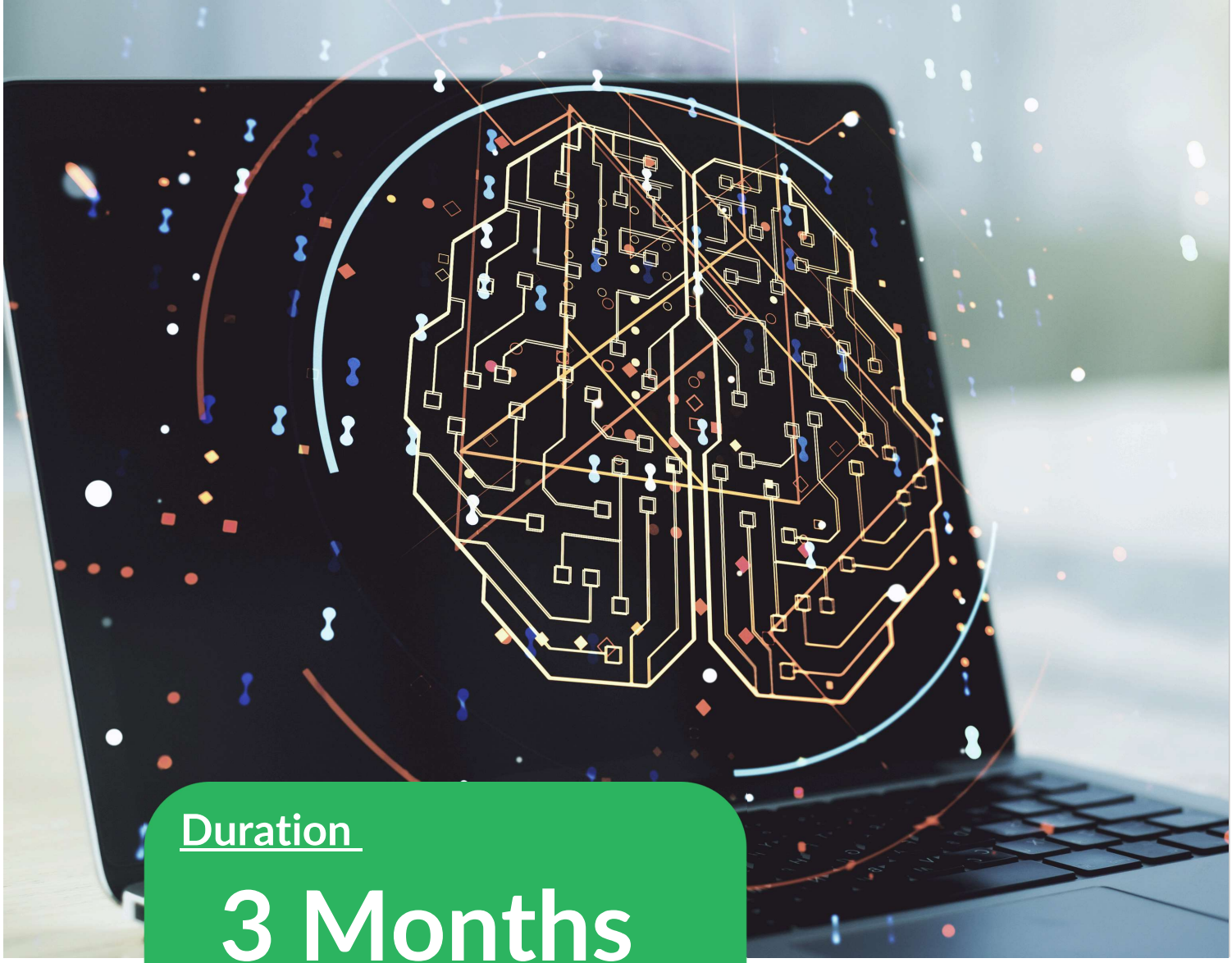


At Groot Academy, we offer specialized training in Web Development, Mobile App Development, Data Science, Digital Marketing, Software Engineering, and much more. Additionally, we have a strong focus on entrepreneurship with dedicated courses such as "Learn Business by Doing Business," which allows aspiring entrepreneurs to gain hands-on experience in running a business while learning the fundamental principles of entrepreneurship.

As a startup incubation center, we provide resources, mentorship, and guidance to students and budding entrepreneurs, helping them turn innovative ideas into successful ventures. Our entrepreneurship programs include business planning, marketing strategy, financial management, leadership skills, and real-world problem-solving. These courses are designed to foster creativity and innovation, enabling students to gain the knowledge and skills necessary to launch and grow their startups.

Over the past two decades, Groot Academy has become a trusted name in education and skill development. Whether you're looking to advance in IT, develop essential business skills, or start your own company, Groot Academy provides the tools, knowledge, and support to help you succeed.

Join us at Groot Academy, where education meets entrepreneurship, and learn how to build your future from the ground up!



Duration

3 Months

Program Overview:

This course provides an overview of data science, covering essential concepts, techniques, and tools used in the field. Students will learn how to analyze data, extract insights, and make data-driven decisions. The course will include hands-on exercises and projects to apply data science methods to real-world problems.

Course Curriculum

Module 1: Overview & Prerequisites

- What is data and use of data in present time and Roadmap
- Data science vs Machine Learning vs AI
- Programming importance in data science
- Setting up environment (installing anaconda and jupyter notebook)
- Basic of computer and programming

Module 2: Python for Data Science

- Overview of Python
- Print Hello world
- Variables, Data types, Keywords and Comments
- Operators
- Condition statements
- Loops & Break continue
- Functions and Modules
- File system & Error handling
- Oops Concepts

Module 3: NumPy & Pandas Essentials

- Importance of numpy and pandas in data science
- numpy arrays and Array Operations
- Array broadcasting and universal functions
- Array manipulation (reshaping, stacking, and splitting arrays)
- Linear Algebra with NumPy & matrix
- Data Manipulation and Filtering
- File management and Integration
- Multidimensional indexing and slicing
- Data Wrangling, Manipulation, Cleaning and Preprocessing with Pandas

Module 4: Data Visualizing

- Data Visualization
- Time Series Analysis
- Plotting with Matplotlib
- Transfer data from other libraries to matplotlib
- Creating plots
- Customizing plots with colors, labels, titles, and annotations
- Heatmaps, pair plots, violin plots
- Plotly and Bokeh
- PowerBI More than introduction
- Plotting and working with geographic data
- Visualizing statistical relationships: regression plots, joint plots
- 3D visualization with Plotly and Matplotlib
- Dashboarding tools & Seaborn

Module 5: Machine Learning Excellence

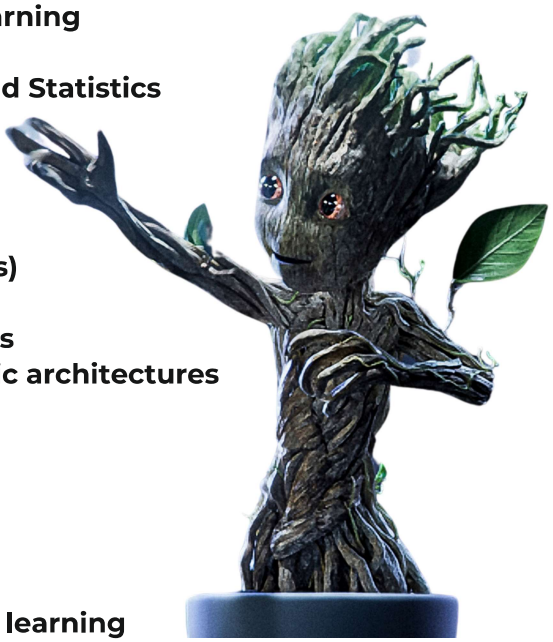
- Machine Learning Fundamentals
- Supervised, Unsupervised, Reinforcement Learning
- Regressions (linear, Logistic etc)
- Installing Machine and Deep learning libraries (scikit-learn, tenserflow, pytorch, keras)
- Regression models: mean squared error (MSE), R-squared
- Classification algorithms and Logistic regression
- Decision trees, random forests and gradient boosting
- K-means clustering
- t-Distributed Stochastic Neighbor Embedding (t-SNE)
- K-fold cross-validation & stratified cross-validation

Module 6: Machine Learning Excellence - 2

- Naïve bayes
- Support Vector Machines (SVM)
- Computer vision
- Probabilistic graphical models for structured learning
- Gradient Boosting Machines (GBMs)
- Model-agnostic meta-learning & Learning to optimize (L2O)
- Designing and implementing machine learning models
- Presenting project findings and insights through reports

Module 7: Deep Learning

- Differences between machine learning and deep learning
- Neural Networks as a basis for deep learning
- Artificial neural networks (ANNs)
- Linear Algebra, Calculus, Probability and Statistics
- Backpropagation, gradient descent
- Convolutional Neural Networks (CNNs)
- Neural Networks
- Recurrent Neural Networks (RNNs)
- Generative Adversarial Networks (GANs)
- Markov decision processes (MDPs)
- Q-learning and policy gradient methods
- Deep Q-Networks (DQN) and actor-critic architectures
- Transformer Models and Attention

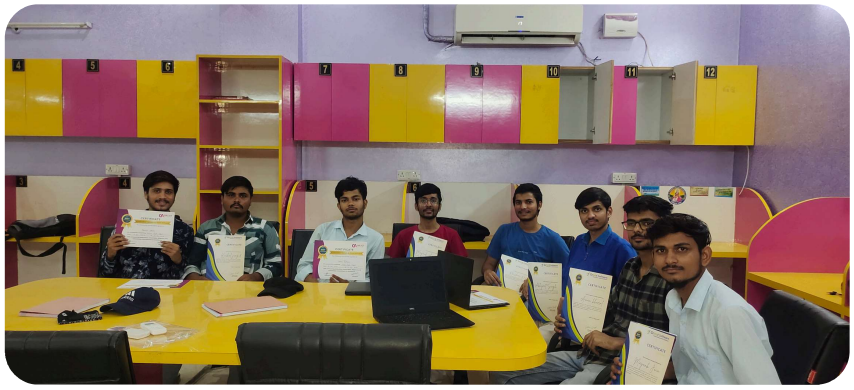


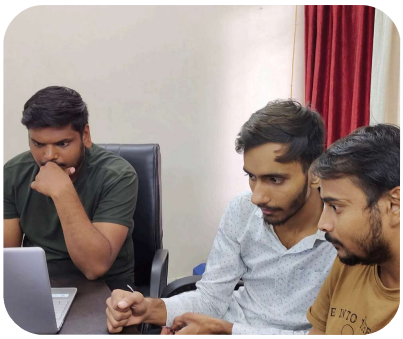
Module 8: More Than Data Science

- Introduction to MLOps
- Version control systems (Git)
- Setting up CI/CD pipelines for machine learning
- Overview abput Docker & Kubernetes
- Artificial intelligence and its subfields
- AWS (Cloud Computing for ML) & Info about Generative AI
- Ethical considerations in AI development and deployment

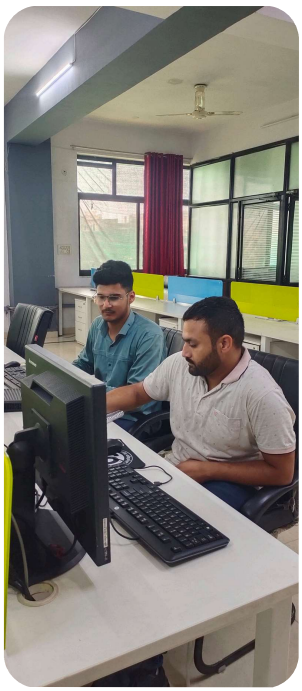
Student Corner

Groot Academy

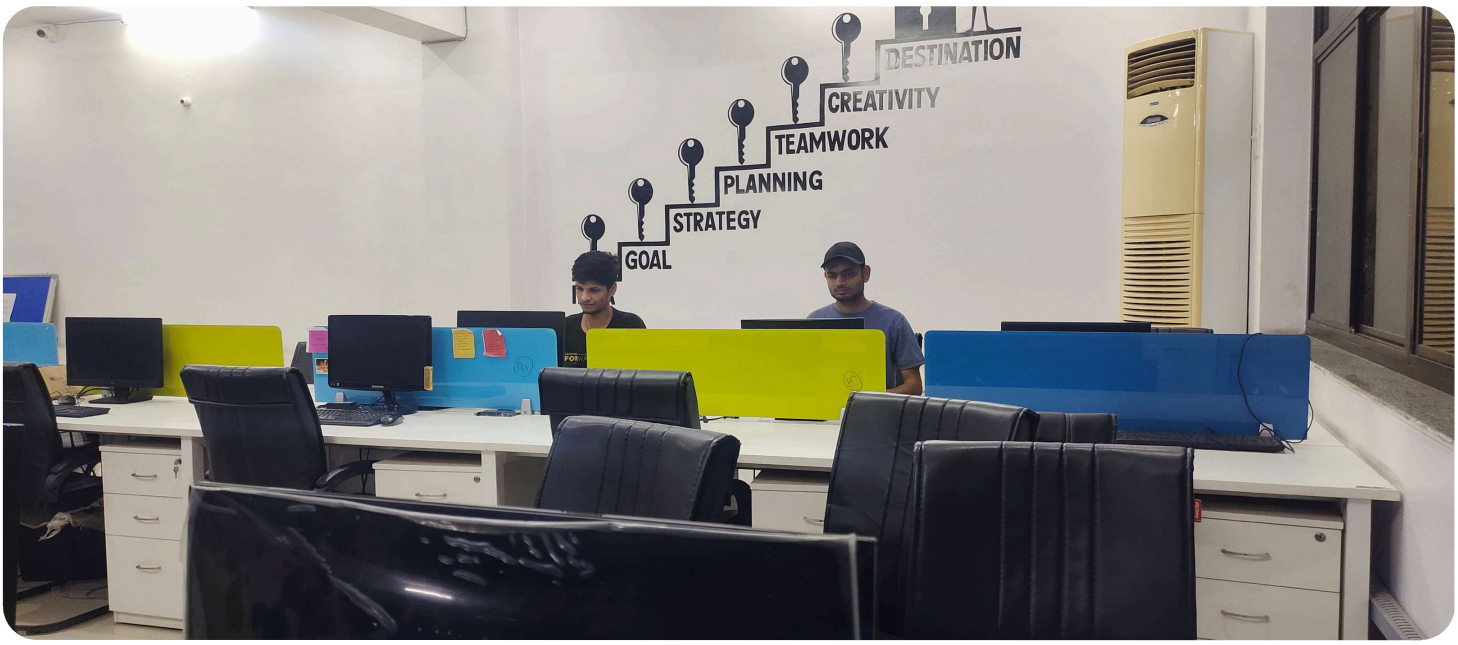




" Marketing Agency by day
innovation lab by night"



We are startup incubator
Groot Software
Your Vision, Our Future
" From Learning to Leading,
GROOT
ACADEMY
CERTIFICATE


DESTINATION
CREATIVITY
TEAMWORK
PLANNING
STRATEGY
GOAL

We are startup incubator
Groot Software

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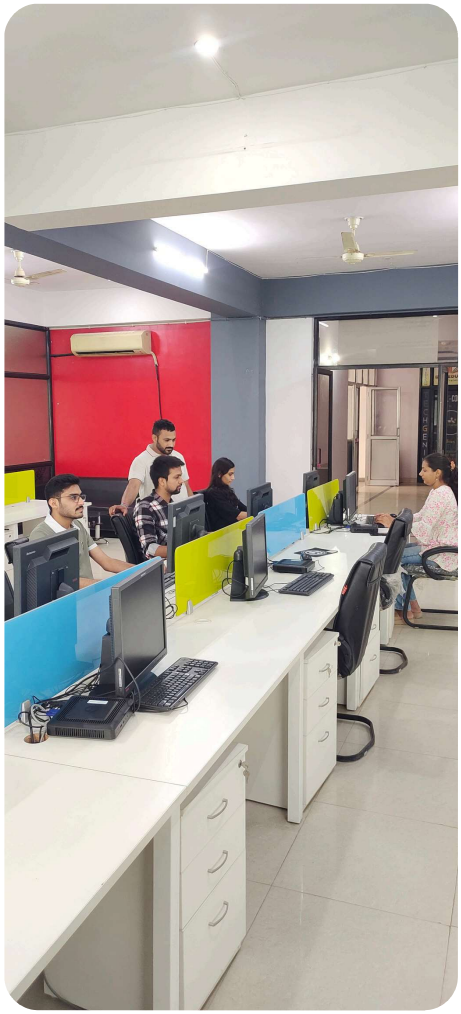
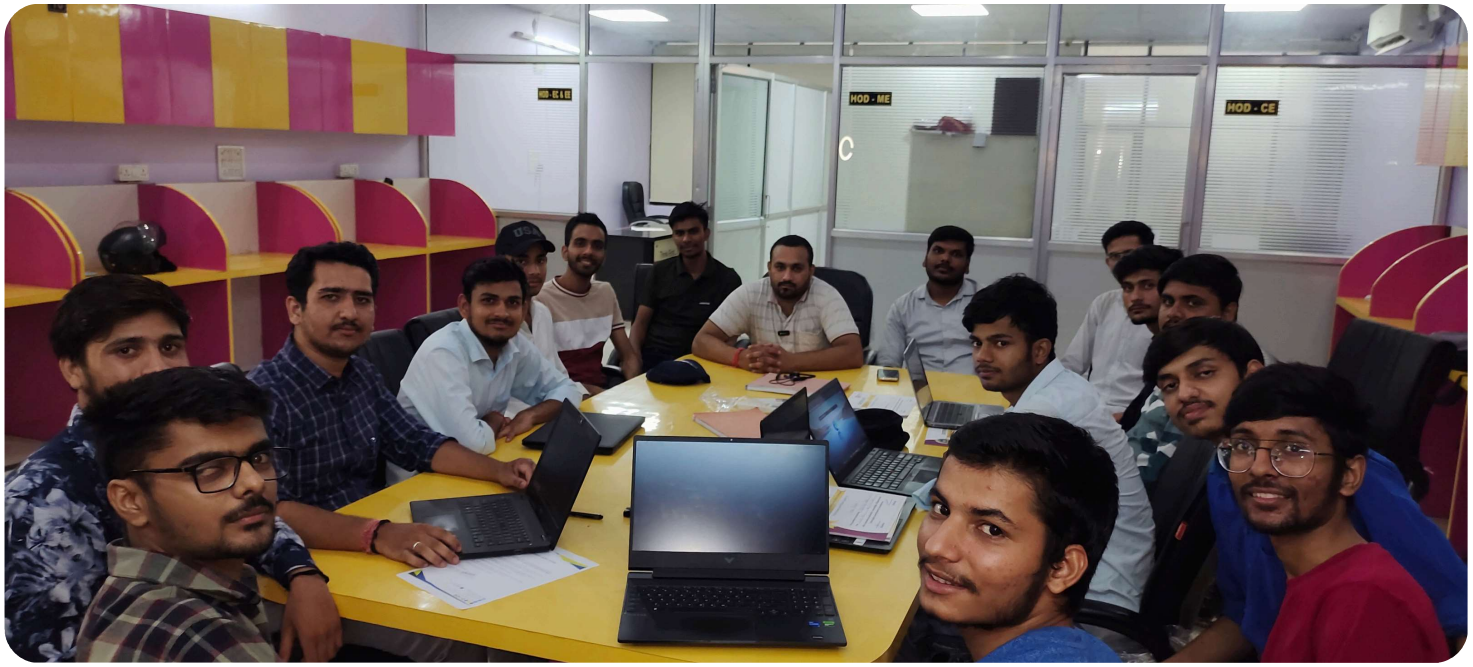
MANAGEMENT
PROGRESS
ACTION
PARTNERS
STRATEGY
PROJECT



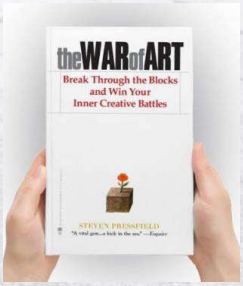
MANAGEMENT
PROGRESS
COLLABORATION

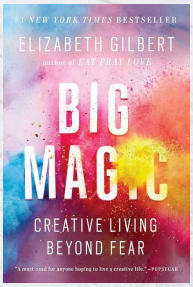

HOD - ME
HOD - CE

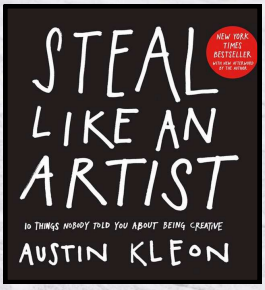
Be The Guardians of the Galaxy

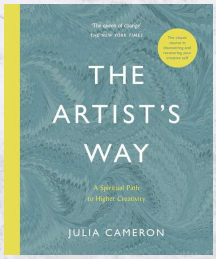
MUST READ

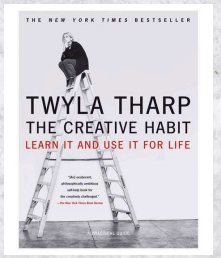
RECOMENDED

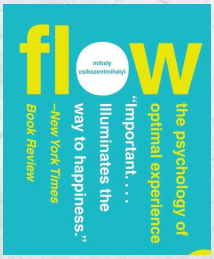


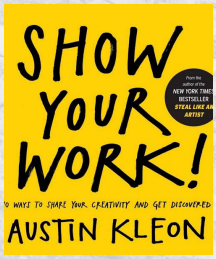












> **Great UI is what users see, but great UX is what they remember.**
>
> **–By I am Groot**

Groot Academy

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