



## NATION INNOVATION

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# MATLAB Internship Program

Master MATLAB from fundamentals to advanced image processing, signal processing and deep learning through a 6-week industry-focused internship.

START DATE	DURATION	MODE	FEE
1st June 2026	6 Weeks	Online (Live)	<b>Rs. 1,499</b> <del>(MRP Rs. 2000/-)</del>

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## Meet Your Instructor



### Mr. Gaurav Verma

Technical Trainer · Expertise in MATLAB, Signal Processing, Image Processing and Deep Learning

An experienced MATLAB professional with deep industry and academic expertise in numerical computing, signal and image processing, and AI-driven analytics. Known for a hands-on teaching style that bridges theory and real-world application, ensuring learners build job-ready skills from day one.

## About the Program

This 6-week MATLAB Internship Program is designed for engineering students, fresh graduates, and working professionals who want to gain deep, practical proficiency in MATLAB — from core syntax and numerical computation to advanced image processing, signal analysis, and deep learning. The program covers 9 structured modules using MATLAB's full toolbox ecosystem.

Participants will work hands-on with MATLAB's Live Scripts, advanced plotting and graphics, user-defined functions, GUI/App Designer tools, and real-world signal and image processing pipelines. The curriculum extends into AI territory with Convolutional Neural Networks and transfer learning using pre-trained models like AlexNet and ResNet.

By the end of this program, learners will be confident building complete MATLAB applications from scratch — from data analysis scripts and interactive GUIs to CNN-based image classifiers — and will graduate with 4 industry-aligned capstone projects ready for their portfolio.

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## Learning Outcomes

**By the end of this program, learners will be able to:**

- Write clean, efficient MATLAB code using scripts, live scripts, functions, loops and error-handling structures.
  - Perform advanced numerical computation including algebra, polynomial operations, differential equations and matrix manipulations.
  - Create publication-quality 2D and 3D visualisations with full control over plot aesthetics and graphical methods.
  - Generate, sample and analyse signals using the Nyquist-Shannon sampling theorem and standard test signals.
  - Execute core image processing operations: arithmetic, geometric transforms, format conversions and optical illusion analysis.
  - Design interactive GUIs and App Designer applications with event-driven callbacks and pop-up menu controls.
  - Build, train and evaluate Convolutional Neural Networks for image classification using MATLAB's Deep Learning Toolbox.
  - Deliver 4 portfolio-ready capstone projects covering camera interfacing, denoising algorithms, crop disease classification and object recognition.
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## Course Curriculum

The curriculum is delivered module-by-module with live sessions, hands-on labs, assignments and instructor-led doubt clearing. Each module builds on the previous one and ends in an applied exercise.

## Module 01: Introduction to MATLAB

*Build a strong foundation in the MATLAB environment — understand the workspace, scripting tools, and file ecosystem before diving into computation.*

- MATLAB Syntax
- Live Scripts
- File Types in MATLAB

## Module 02: Arithmetic Operations

*Master numerical computation from basic algebra through to matrix operations and differential equations, learning how MATLAB handles different data types and logical conditions.*

- MATLAB Algebra
- Polynomials
- Differential Equations
- MATLAB Data Types
- Logical Operations
- Matrix Operations using MATLAB

## Module 03: Creating User-Defined Functions

*Go beyond built-in functions to write clean, reusable code with proper control flow, error handling, and modular design principles.*

- Inline Functions
- Conditional Structures
- Loops
- Handling Errors in MATLAB Codes

## Module 04: MATLAB Graphs and Graphics

*Learn to create publication-quality visualisations — from basic 2D/3D plots to advanced functional plotters and graphical problem-solving techniques.*

- 2-D Plots
- 3-D Plots
- Function Plotters
- Plot Aesthetics
- Solving Quadratic Equations by Graphical Method

## Module 05: Introduction to Signals

*Explore the fundamentals of digital signal theory, including signal generation, the Nyquist-Shannon sampling theorem, and common test signal types.*

- Generation of Signals
- Sampling Theorem
- Test Signals

## Module 06: Introduction to Image Processing

*Gain hands-on experience with core image processing operations — manipulating pixels, transforming image geometry, and converting between image formats.*

- Image Arithmetic with Examples
- Image Geometry
- Optical Illusion
- Image Conversion

### Module 07: Introduction to GUI

*Design interactive MATLAB Graphical User Interfaces using GUIDE and App Designer to build usable, visual tools for your algorithms.*

- GUI Design Principles
- App Designer Workflow
- Event-Driven Programming
- Callbacks and Handlers

### Module 08: Pop-up Menu Example

*A practical, hands-on session demonstrating interactive UI component design with a focus on pop-up (dropdown) menus, data binding, and dynamic response.*

- Pop-up Menu Component Design
- Data Binding to UI Controls
- Dynamic Display Logic
- User Event Handling

### Module 09: Advanced MATLAB for Image Processing

*Advance into AI-driven image analysis — from classical processing pipelines to deep learning with Convolutional Neural Networks for real-world classification tasks.*

- Image Processing Pipelines
- Image Classification Techniques
- Deep Learning & Artificial Neural Networks (ANNs)
- Convolutional Neural Networks (CNNs)

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## Hands-on Projects

Every concept is reinforced through a project. You will graduate with a portfolio of working, demonstrable projects — not just notes.

#	PROJECT	OVERVIEW	KEY DELIVERABLES
#1	<b>Camera Interfacing with MATLAB</b>	Configure and control a hardware camera through MATLAB to capture, stream, and process live video frames in real time.	<ul style="list-style-type: none"> <li>• Camera hardware setup and MATLAB Image Acquisition Toolbox</li> <li>• Live video stream capture and frame extraction</li> <li>• Real-time image display and basic processing pipeline</li> </ul>

			<ul style="list-style-type: none"> <li>• Saving and exporting captured frames</li> </ul>
#2	<b>Image Processing — Denoising and Filtering Algorithm Implementation</b>	Implement and compare classical denoising and filtering algorithms to restore image quality and prepare images for downstream analysis.	<ul style="list-style-type: none"> <li>• Noise types: Gaussian, Salt-and-Pepper, Speckle</li> <li>• Spatial domain filters: Mean, Median, Gaussian</li> <li>• Frequency domain filtering using FFT</li> <li>• Quantitative comparison: PSNR, SSIM metrics</li> </ul>
#3	<b>Image Classification of Crop Diseases with CNN</b>	Build and train a Convolutional Neural Network to automatically identify and classify crop diseases from leaf images, producing a deployable model.	<ul style="list-style-type: none"> <li>• Dataset preparation, augmentation, and labelling</li> <li>• CNN architecture design (layers, activations, pooling)</li> <li>• Training, validation, and hyperparameter tuning</li> <li>• Model evaluation: accuracy, confusion matrix, ROC curves</li> </ul>
#4	<b>Object Recognition with MATLAB</b>	Develop an end-to-end object recognition pipeline capable of detecting and identifying objects within static images and live video streams.	<ul style="list-style-type: none"> <li>• Feature extraction techniques (HOG, LBP, SIFT)</li> <li>• Pre-trained model integration (AlexNet, ResNet via Transfer Learning)</li> <li>• Custom classifier training on object datasets</li> <li>• Bounding box detection and real-time recognition demo</li> </ul>

## Get Certified

Yes! You will be certified for this course on completion of the program.

✓ Official & Verified	✓ Easy to Share	✓ Career Edge
Signed by the instructor — recognised certificate	Add directly to your resume and LinkedIn profile	Use it to stand out and get ahead in your career shift

 **RESERVE YOUR SEAT**

## Live Training Highlights

Everything you get when you enrol in a Nation Innovation live training program — from certification to career support.

<b>Certificate</b> Certificate course in collaboration with NSDC, DPIIT	<b>Internship</b> Opportunity to intern overseas
<b>24x7 Support</b> Training with 24x7 mentor support	<b>Mentoring &amp; Doubt Sessions</b> Personalized 1:1 mentoring
<b>Flexible Schedule</b> Flexible course schedule to fit students and working professionals	<b>6-Digit Salary Potential</b> Assured 6-digit salary association with industry partners
<b>LMS &amp; Recording Access</b> Free access to Learning Resource Portal and session recordings	<b>Live Projects</b> Engage in 3+ live projects and live case studies
<b>100% Placement Support</b> Career assistance by industry experts	<b>Industry Tools Access</b> Hands-on access to industry-leading tools and platforms

## Bonus Learning Perks

Career-ready add-ons included with your enrolment, at no extra cost.

<b>★ GitHub Profile</b> Build a recruiter-ready GitHub portfolio with real project commits.	<b>★ LinkedIn Profile</b> Optimise your LinkedIn for visibility, keywords and recruiter reach.	<b>★ Resume Writing</b> Craft an ATS-friendly, role-targeted resume that gets shortlisted.	<b>★ Soft Skills</b> Build communication, teamwork and workplace etiquette for interviews.	<b>★ Mock Interview</b> Live mock interviews with feedback to sharpen your performance.
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## Learning Roadmap

Your journey from learner to placed professional — broken down into three guided steps.

<b>STEP 1 — Building a Strong Foundation</b> Build strong fundamentals from scratch with industry experts.	<b>STEP 2 — Internship &amp; Project Learning</b> Gain hands-on experience working on 3+ live projects.	<b>STEP 3 — Placement Support</b> Counselling, confidence building and resume support to land the right career opportunity.
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## Recognised & Trusted

Nation Innovation operates in collaboration with leading Government of India initiatives and industry bodies — so your learning, certificate and career support carry credibility.

MSME Registered	Startup India	Skill India	DPIIT Approved	NSDC Partner
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## What Our Learners Say

Trusted Reviews: 24+ | Average rating: 5 / 5 ★

<p>★★★★★</p> <p><i>"Nice and well-organized course."</i></p> <p><b>Ashwini Ranade</b> Course: Data Science Placed at: <b>National Institute of Hydrology (NIH)</b></p>	<p>★★★★★</p> <p><i>"A highly enriching experience that strengthened my coding confidence and industry readiness through practical learning and supportive mentorship."</i></p> <p><b>Manisha Kumari</b> Course: Python Programming Internship Placed at: <b>CISCO</b></p>
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<p>★★★★★</p> <p><i>"Overall good."</i></p> <p><b>Deepak Chaudhary</b> Course: Internet of Things Placed at: <b>BlockDeep Labs</b></p>	<p>★★★★★</p> <p><i>"Your teaching style and dedication always inspires me. I got to learn many new things from this training."</i></p> <p><b>Sikandar Kumar</b> Course: Python Programming</p>
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## Get in Touch

We're here 24x7 — for course queries, technical questions, payment help or career counselling.

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<b>Office Address</b>	Block C, New Ashok Nagar, New Delhi, DL 110096
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