

Matlab for ECE/EE from Basic to advanced

Software: Matlab

Projects: Basic calculator, advanced calculator, Beed movement animation, Sphere movement with slider, Rice Counting, Face recognition, Voice recognition, Inverting Amplifier, Am modulation.

1-Basic Introduction

- Entering Commands
- Matrices and Arrays
- Operators and Elementary Operations
- Special Characters
- Data Types

2-Performing math operation using Matlab

- Elementary Math
- Linear Algebra
- Statistics and Random Numbers
- Interpolation
- Optimization
- Numerical Integration and Differential Equations
- Fourier Analysis and Filtering
- Sparse Matrices
- Computational Geometry

3-Graphics

- 2-D and 3-D Plots
- Animations

4-Programming

- Control Flow
- Scripts
- Functions

5- Data and File Management

- Workspace Variables
- Data Import and Export
- File Operations
- Search Path

- Operating System Commands
- Internet File Access
- Serial Port Devices

6-GUI (Graphical user interface)

- GUI Building Basics
- Component Selection
- Component Layout
- Coding GUI Behavior
- Packaging GUIs as Apps

7-Image Processing

- Introduction
- Point Processing
- Neighborhood Processing
- The Fourier Transform
- Image Restoration
- Image Segmentation
- Mathematical morphology
- Color processing
- Image acquisitions

8-Digital Signal Processing

- DSP Modeling
- Filter Design and Analysis
- Filter Implementation
- Transforms and Spectral Analysis
- Speech and Audio Processing

9-Control System

- Linear System Representation
- Model Interconnection
- Model Transformation
- Linear Analysis
- Control Design

10-Communications System Toolbox

- Communications Modeling
- System Design

- Channel Modeling and RF Impairments
- Measurements and Analysis

11-Fuzzy Logic

- Fuzzy Inference System Modeling
- Adaptive Neuro-Fuzzy Modeling
- Data Clustering

12-Simulink

- Modeling of system
- Simulation of system
- Analysis of system
- Block Creation
- SimElectronics
- SimPowerSystems