

NumPy Basic Project List — perfect for beginners to practice data manipulation, arrays, and numerical operations

NumPy Basic Project Ideas

Level 1 – Very Basic

1. Array Basics Playground

- Create, reshape, slice, and concatenate arrays

2. Student Marks Analyzer

- Find total, average, highest & lowest marks using NumPy

3. Temperature Converter

- Convert Celsius ↔ Fahrenheit using vectorized operations

4. Number Pattern Generator

- Generate patterns like identity matrix, diagonal matrix

5. Dice Roll Simulator

- Generate random dice outcomes & analyze frequency
-

Level 2 – Beginner

6. Bank Data Interest Calculator

- Apply interest on arrays & compute growth for multiple customers

7. COVID Data Mini Dashboard

- Daily case arrays → sum, mean, percent increase

8. Retail Sales Analysis

- Product-wise total & monthly revenue using array operations

9. Movie Rating Analytics

- Min, max, avg rating per movie & sorting with NumPy

10. Electricity Bill Estimator

- Units array → price slabs → total bill calculation
-

Level 3 – Practical Mini Projects

11. Image Pixel Brightness Analyzer

- Use NumPy to increase, decrease, or normalize pixel values (grayscale image)

12. Weather Trend Analysis

- Analyze weekly/monthly weather data and find anomalies

13. Stock Price Analytics

- Daily closing prices → Return % → volatility measurement

14. E-commerce Customer Behavior Matrix

- Rows: Customers | Columns: Product categories → stats & sorting

15. Sport Player Stats Matrix

- Convert performance data into arrays & analyze best performer
-

Level 4 – Challenge Based

16. Sudoku Board Validator

- Check valid rows, columns, and 3×3 grids using array inspection

17. Image Noise Addition & Filtering

- Add random noise and apply simple filters with NumPy

18. Logistics Route Optimization (Basic)

- Compute distance matrix and find shortest warehouse path

19. Election Vote Analysis Simulation

- Count votes per candidate → find winner using NumPy functions

20. Fraud Transaction Detection (Simple)

- Detect outliers in transaction amount array
-

Additional Creative Ideas

- Fitness Tracker Data Analysis
- Audio Waveform Normalization
- School Attendance Percentage Calculator

- Social Media Engagement Rate Analyzer
 - ATM Cash Withdrawal Pattern Insight
-

- ✓ Step-by-step instructions
- ✓ Dataset for each project
- ✓ Code + Output + Explanation
- ✓ PDF Portfolio format