System Requirements and Dependencies

1. Core Dependencies

Python Packages

- numpy==1.24.3
- pandas==2.0.3
- scikit-learn==1.3.0
- xgboost==2.0.1
- lightgbm==4.1.0
- nltk==3.8.1
- joblib==1.3.2
- tqdm==4.65.0

Text Processing

- nltk==3.8.1
- scikit-learn==1.3.0

Visualization

- matplotlib==3.7.2
- seaborn==0.12.2

Utilities

- joblib==1.3.2
- tqdm==4.65.0

2. System Requirements

Hardware

- CPU: Intel i5/AMD Ryzen 5 or better
- RAM: 16GB minimum
- Storage: 5GB free space
- GPU: CUDA-capable GPU (optional, for faster processing)

Software

- Python 3.9 or higher
- pip (Python package manager)
- Git (for version control)

3. Installation Instructions

Step 1: Clone the repository

```
git clone https://github.com/smayuresh/Tool-Building-Project-Task-1.git
cd Tool-Building-Project-Task-1
```

Step 2: Create and activate virtual environment

```
python -m venv venv
source venv/bin/activate  # On Windows: venv\Scripts\activate
```

Step 3: Install dependencies

```
pip install -r requirements.txt
```

4. Version Compatibility

Python Version

- Minimum: Python 3.9
- Recommended: Python 3.9-3.11

Package Versions

All package versions are specified in requirements.txt for compatibility.

5. Additional Notes

Virtual Environment

- Using virtual environment is recommended
- Helps isolate project dependencies
- Prevents conflicts with system packages

GPU Support

- Optional for faster processing
- Requires CUDA toolkit
- Compatible with NVIDIA GPUs

Troubleshooting

- If installation fails, try updating pip:
  ```
  python -m pip install --upgrade pip
  ```
- For GPU issues, verify CUDA installation
- Check system requirements if performance is poor