# SmartSDLC  AI Requirement Extraction using NLP

This project is a simple demonstration of how Artificial Intelligence (AI) can enhance the Software Development Lifecycle (SDLC)  specifically during the Requirement Gathering phase. It uses Natural Language Processing (NLP) to automatically extract functional requirements from plain text using a transformer-based AI model.

## Project Objective

To show how AI can:

- Understand natural language (like client emails)
- Identify software requirements (e.g., login, payments, admin panel)
- Improve accuracy and speed in early SDLC stages

## Technologies Used

- Python
- Hugging Face Transformers
- Zero-shot classification with facebook/bart-large-mnli

## Example Use Case

Imagine a client sends you this:

"We are building an e-commerce website. The users should be able to register, login, browse products, add items to cart, and make payments. Admins must be able to manage product listings and track orders."

This tool will automatically extract key requirements like:

- User Registration
- User Login
- Product Browsing
- Online Payments
- Admin Product Management
- Order Tracking

## How to Run

1. Open this in Google Colab
2. Install dependencies (automatic in code)
3. Run the code and view extracted requirements

## Output Example

Extracted Requirements using AI:

- User Login (confidence: 0.89)
- Online Payments (confidence: 0.87)
- Product Browsing (confidence: 0.86)
- Add to Cart (confidence: 0.83)
- User Registration (confidence: 0.82)
- Admin Product Management (confidence: 0.76)
- Order Tracking (confidence: 0.71)

## Future Work

- Add AI code generation (Phase 2)
- AI-based bug prediction (Phase 3)
- Auto test case generation (Phase 4)

## License

This project is licensed under the MIT License.

## Created as part of the SmartSDLC Series

Aiming to bring intelligent automation into every stage of software development.