A SYNOPSIS OF MINI PROJECT ON

AI Dungeon Style Text Based Adventure Game

Submitted In Partial
Fulfillment Of The Requirements For The Award Of The Degree Of

BACHELORS OF TECHNOLOGY
IN
COMPUTER SCIENCE & ENGINEERING

By

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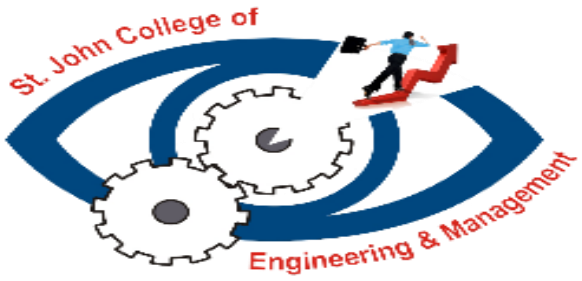
COORDINATOR



Department of Computer Science and Engineering
Islamic University of Science and Technology
Awantipura, Pulwama (Aug-Dec)2015

ABSTRACT

This project aims to develop an AI-powered, text-based adventure game inspired by the AI Dungeon model. The game will use natural language processing and AI algorithms to dynamically generate storylines based on player input. Unlike traditional games with predefined scripts, this project will create a responsive narrative environment, enabling players to immerse themselves in limitless, branching storylines where they can interact with the world freely using natural language.

INTRODUCTION

Text-based adventure games have been a staple of early computer gaming, offering rich storytelling experiences driven by the player's imagination. With the rise of artificial intelligence, we now have the capability to dynamically generate these stories in real-time, offering infinite plotlines. This project combines the nostalgia of classic adventure games with modern AI capabilities to create an engaging, open-ended gameplay experience.

MOTIVATION

The main motivation behind this project is to harness the power of AI and NLP to build a game that is truly interactive, creative, and capable of infinite storytelling. Traditional games follow fixed paths; this AI-based approach ensures unique experiences for every player interaction, promoting creativity, learning, and exploration

WHY THIS PROJECT?

- It merges Artificial Intelligence with entertainment and gaming.
- Encourages users to explore creative thinking and decision-making.

- Provides real-time dynamic response and story progression.

- Demonstrates practical use of NLP and deep learning in gaming.

OBJECTIVES AND GOALS

- Develop a text-based game that can interpret user input using NLP.
- Generate creative, logical responses to user commands using AI.
- Maintain coherent storylines while supporting branching narratives.
- Design a minimal interface for user interaction.
- Allow saving and loading of user progress.

BACKGROUND

AI Dungeon is a popular example that uses large language models like GPT to generate interactive text adventures. This project will follow a similar approach but on a smaller scale for academic purposes. Key concepts involved include reinforcement learning, prompt engineering, natural language processing, and story context memory.

TOOLS and PLATFORM

Hardware requirements:

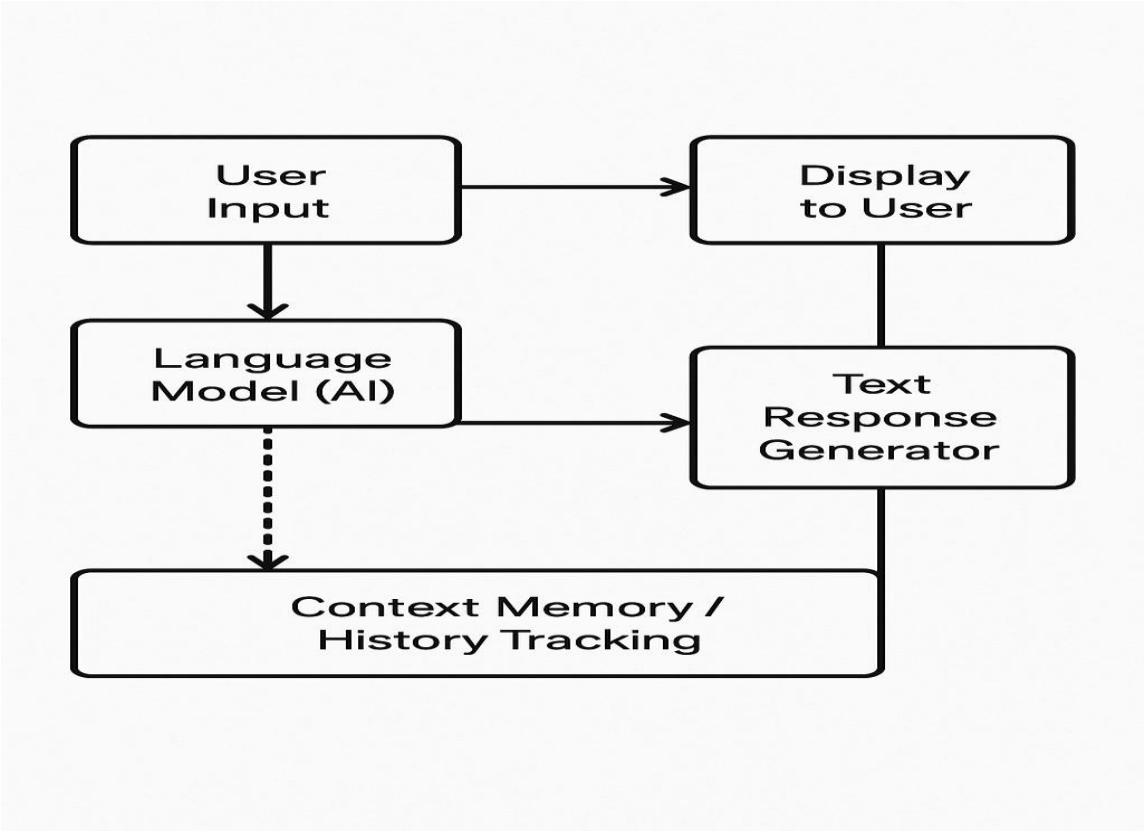
- ✓ Minimum 8 GB RAM
- ✓ Intel i5 or higher processor
- ✓ Stable internet connection (if using API-based models)
- ✓ GPU recommended for local model inference

Software platforms:

- ✓ Python 3.10+
- ✓ Streamlit / Flask (for UI)
- ✓ Transformers Library by HuggingFace
- ✓ OpenAI API / LLaMA / GPT-Neo / GPT-J (for backend language model)
- ✓ Google Colab / Jupyter Notebook (for experimentation and training)
- ✓ VS Code / PyCharm (IDE)

BLOCK DIAGRAMS OF PROJECT

- General block diagram



- APPLICATIONS:

This project has numerous useful applications:

- **Gaming Industry:** Innovative storytelling in games.
- **Education:** Interactive historical or science-based adventures.
- **Creative Writing Tools:** Help writers brainstorm plots.
- **Mental Health:** Therapeutic interactive journaling or role-play.
- **Language Learning:** Conversational practice for ESL learners.

Future of the project:

- Integration with voice input/output for more immersive interaction.

- Multiplayer collaboration in a shared narrative world.
- Incorporating visual elements and world maps.
- Adding emotion and sentiment-based responses.

Schedule of Project work completion:-

Gantt chart :

Signature(s) of student

Name: Shreyash Pandey
Signature: _____

Name: Dipali Umesh Sharma
Signature: _____

Name: Ishant Shah
Signature: _____

LITERATURE SURVEY:-

Sr. No.	Paper/Tool	Authors / Organization	Core Contribution	Methodology / Model Used
1	LIGHT: A General Benchmark for Learning in Interactive Fiction Worlds	Urbanek et al., Facebook AI	Introduced a benchmark environment with characters, actions, and objects for learning grounded storytelling	BERT, Transformer Memory Networks
2	Story Realization: Converting Plots to Stories	Yao et al., AAAI	Developed a system to convert abstract plot graphs into coherent and detailed natural language stories	Sequence-to-Sequence with Plot Graph Embeddings
3	Hierarchical Text Generation for Long Stories	Fan et al., ACL	Proposed a hierarchical text generation model that first plans at sentence level, then generates full stories	Two-level RNNs / Transformer-based architectures

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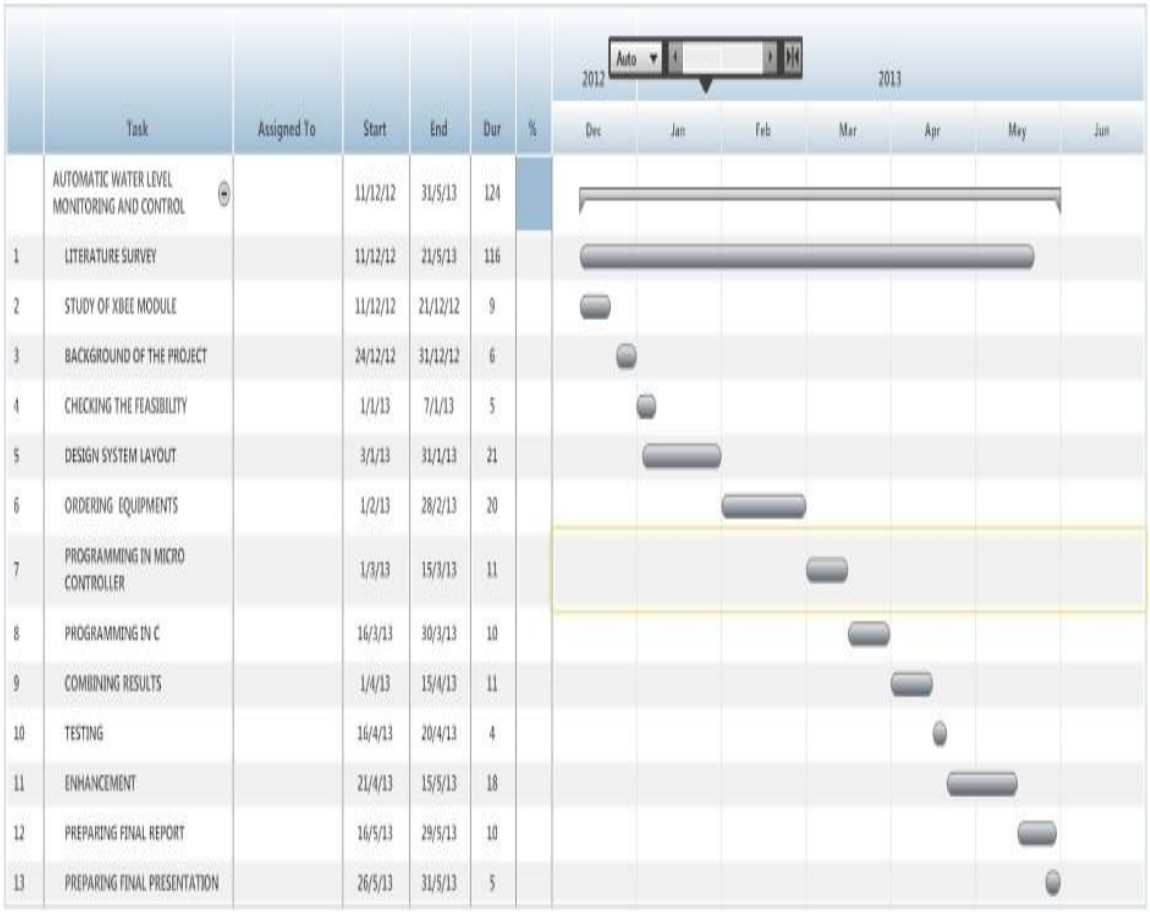
- Urbanek, J., Fan, A., Kiela, D., Rocktäschel, T., Bordes, A., & Weston, J. (2019). **LIGHT: Learning in Interactive Games with Humans and Text**. *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing (EMNLP-IJCNLP)*. https://aclanthology.org/D19-1131/
- Yao, L., Li, J., Li, N., Gao, J., & Zhang, R. (2019). **Plan-and-Write: Towards Better Automatic Storytelling**. *Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)*. https://ojs.aaai.org/index.php/AAAI/article/view/4608
- Fan, A., Lewis, M., & Dauphin, Y. (2018). **Hierarchical Neural Story Generation**. *Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics (ACL)*. https://aclanthology.org/P18-1082/



	Task	Assigned To	Start	End	Dur	%
	AUTOMATIC WATER LEVEL MONITORING AND CONTROL		11/12/12	31/5/13	124	
1	LITERATURE SURVEY		11/12/12	21/5/13	116	
2	STUDY OF XBEE MODULE		11/12/12	21/12/12	9	
3	BACKGROUND OF THE PROJECT		24/12/12	31/12/12	6	
4	CHECKING THE FEASIBILITY		1/1/13	7/1/13	5	
5	DESIGN SYSTEM LAYOUT		3/1/13	31/1/13	21	
6	ORDERING EQUIPMENTS		1/2/13	28/2/13	20	
7	PROGRAMMING IN MICRO CONTROLLER		1/3/13	15/3/13	11	
8	PROGRAMMING IN C		16/3/13	30/3/13	10	
9	COMBINING RESULTS		1/4/13	15/4/13	11	
10	TESTING		16/4/13	20/4/13	4	
11	ENHANCEMENT		21/4/13	15/5/13	18	
12	PREPARING FINAL REPORT		16/5/13	29/5/13	10	
13	PREPARING FINAL PRESENTATION		26/5/13	31/5/13	5	

	Task	Assigned To	Start	End	Dur	%
	A HOME SECURITY SYSTEM FOR INTRUSION DETECTION AND BURGLARY PREVENTION USING WIRELESS SENSORS		11/12/12	31/5/13	124	
1	LITERATURE SURVEY		11/12/12	21/5/13	116	
2	STUDY OF XBEE MODULE		11/12/12	21/12/12	9	
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