**FORM 2**

THE PATENT ACT, 1970

(39 of 1970)

&

THE PATENT RULES, 2003

**COMPLETE SPECIFICATION**

**(**See section 10 and rule 13**)**

**1. TITLE OF THE INVENTION**

SELF LEARNING BOT (MEDIC BOT) – A CHATBOT FOR SOLUTION TO MEDICAL SYMPTOMS BY USING NLP, MACHINE LEARNING TECHNIQUES, REINFORCEMENT LEARNING AND DEEP LEARNING TECHNIQUES.

**2. APPLICANTS**

PRESIDENCY UNIVERSITY,BANGALORE

**3. PREAMBLE TO THE DESCRIPTION**

Complete: The following specification particularly describes the invention and the manner in which it is to be performed.

**4.**  **DESCRIPTION**

The Chatbot Project ‘medic bot’ provides ways to improve patient experience and outcomes. One way to achieve this is by leveraging artificial intelligence (AI) to provide personalized recommendations and predictions based on patient’s symptoms and medical history. In this project, we propose the development of a hospital recommendation and disease prediction chatbot. The chatbot will be able to recognize symptoms and provide personalized recommendations for hospitals based on medical needs.

**5. CLAIMS:-**

We Claim,

"Medic Bot" ensures constant availability, delivering efficient, personalized solutions via a user-friendly interface. Powered by Flask, it employs machine learning to provide accurate information on Health Symptoms, offering users swift access without the need for manual research. This enhances the user an overall experience.

Dated this 19 of December 2023

**6. DATE AND SIGNATURE**

Mr. Muthu Raju V Ambrish Kumar S Mohammed Enthihaj Rihan Anwar CA Krishnan S

**7. ABSTRACT OF THE INVENTION**

Abstract:

Our team has developed a Medic Bot, merging Reinforcement Learning and Natural Language Processing for an interactive and personalized healthcare platform. The bot refines responses based on user feedback, ensuring dynamic learning. With NLP, it comprehends user queries, classifies intents, and extracts medical entities, providing accurate information. This innovation represents a significant step in healthcare technology, emphasizing continuous learning and user-centric interactions.

Detailed Description:

Technical Architecture:

* **Reinforcement Learning (RL) Modul**e: Environment: Represents the user interactions and feedback.

1. **Agent**: The Medic Bot itself, which takes actions (responses) in the environment.
2. **Reward** **System**: Feedback mechanism for reinforcing or adjusting the bot's responses based on user interactions

* **Natural** **Language** **Processing** (**NLP**) Module: Intent Classification: Utilizes machine learning algorithms to understand the user's intent behind a query.

1. **Entity Extraction**: Identifies and extracts key medical entities from user inputs, such as symptoms, conditions, or medications.
2. **Response Generation**: Generates human-like responses by understanding the nuances of natural language

* **Knowledge Base**: Medical Literature and Research Database: Contains a vast repository of medical literature, research papers, and clinical notes for the bot to access and stay informed.

**Continuous Updating Mechanism**: Regularly updates the knowledge base through iterative development and incorporation of new medical information.

* **User Interaction Layer**: Conversational Interface: Provides an intuitive and accessible interaction for users to engage in meaningful conversations with the Medic Bot.

1. **Personalization**: Adapts responses based on user history and preferences for a tailored experience.

* **Feedback Loop**: User Feedback Mechanism: Captures user feedback on the bot's responses to enhance the learning process.
* **Security and Compliance**: Data Encryption: Ensures the security and privacy of user health data.

1. **Compliance Measures**: Adheres to relevant healthcare data protection and regulatory standards.

* **Scalability and Performance Optimization**: Cloud Infrastructure: Leverages cloud services for scalability and efficient resource utilization.

1.**Performance Monitoring and Optimization**: Constantly monitors and optimizes the system for responsiveness and efficiency.

Data Entry Distribution:

* Input accurate patient details, medical history, and symptoms.
* Include vital signs, diagnostic test results, and prescribed medications.
* Document procedures, encounters, and follow-up instructions.
* Prioritize patient privacy and adhere to security protocols.
* Implement data validation checks for accuracy.
* Design a user-friendly interface for efficient data entry.
* Provide training for users and ensure quality assurance.
* Comply with healthcare regulations, such as HIPAA, for data protection.

Advantages:

* **Smart Learning**: The Medic Bot learns and gets smarter over time by listening to what users say and making improvements based on their feedback.
* **Talking Naturally**: The Medic Bot can talk to users like a person, making conversations about health feel more natural.
* **Help Just for You**: The Medic Bot gives advice and information that fits each user personally, like a healthcare buddy just for them.
* **Always Getting Better**: The Medic Bot keeps learning and improving, staying updated with the latest health information through regular updates.
* **Understanding Your Questions**: The Medic Bot is good at understanding what users are asking and finding the important medical information.

Conclusion:

In conclusion, the article highlights the transformative impact of the "Medic Bot Using Reinforcement" in revolutionizing healthcare through personalized and interactive experiences. The chatbot employs NLP and machine learning to understand user queries, providing conversational and personalized responses akin to a real physician. It relies on a knowledge base and external APIs for comprehensive information. The forward-looking perspective suggests future advancements like sophisticated ML algorithms, voice recognition, speech synthesis, and integration with wearable devices. The chatbot's potential extends to mental health support, multilingual capabilities, promising inclusive and effective healthcare experiences. Ongoing research in healthcare chatbot development holds promise for improved patient outcomes.