*Research on AI Models for Doctor Appointment Chatbots*

## **AI Models for Doctor Appointment Chatbots**

### 1. Rule-Based Chatbots

1. Uses predefined rules and keyword matching.
2. Simple, easy to implement.
3. Limited flexibility, low accuracy (60-70%).

### 2. Retrieval-Based Models

* Selects best response from predefined answers.
* More dynamic than rule-based models.
* Limited to stored responses, accuracy (70-80%).

### 3. Generative Models (GPT-4, LLaMA, etc.)

* Uses deep learning for human-like responses.
* Handles complex queries, learns from interactions.
* High computational cost, accuracy (85-95%).

### 4. Hybrid Models

* Combines retrieval and generative approaches.
* Balances structure and flexibility.
* Complex implementation, accuracy (90-95%).

### 5. BERT-Based Models (DistilBERT, BioBERT, etc.)

* Optimized for medical queries.
* Strong intent recognition, needs fine-tuning.
* Accuracy (85-92%).

## Comparison Table

| AI Model | Strengths | Limitations | Accuracy |
| --- | --- | --- | --- |
| Rule-Based | Simple, easy | Limited responses | 60-70% |
| Retrieval-Based | Structured responses | Cannot generate new answers | 70-80% |
| Generative | Handles complex queries | High cost, possible errors | 85-95% |
| Hybrid | Balances structure & flexibility | Complex setup | 90-95% |
| BERT-Based | Strong medical NLP | Needs fine-tuning | 85-92% |

## Well-Suited AI Models for Doctor Appointment Chatbots

| AI Model | Provider | Strengths | Limitations | Accuracy |
| --- | --- | --- | --- | --- |
| GPT-4 | OpenAI | High accuracy, conversational | Expensive, requires fine-tuning | 90-95% |
| Claude | Anthropic | Ethical AI, safe responses | Limited knowledge updates | 85-92% |
| LLaMA | Meta | Open-source, flexible | Needs significant tuning | 80-90% |
| Bard (Gemini) | Google | Integrated with search | Less optimized for medical NLP | 85-90% |
| BioBERT | Google | Medical-focused NLP | Requires domain-specific tuning | 85-92% |

## Conclusion

* Rule-based: Good for simple scheduling.
* Retrieval-based: Better structured responses.
* Generative (GPT-4, etc.): Best for conversations but costly.
* BERT-based: Ideal for medical queries.
* Hybrid: Best balance of accuracy & reliability.
* Best suited models: GPT-4, Claude, LLaMA, Bard (Gemini), and BioBERT depending on use case.