Telecom AI Assistant - Frequently Asked Questions

1. What is a Telecom AI Assistant?

A Telecom AI Assistant is a virtual system that helps telecom engineers or customers retrieve information from telecom documents using natural language queries.

2. What are common issues faced by telecom engineers at sites?

Common issues include signal interference, equipment malfunction, fiber cuts, configuration errors, and power failures.

3. What is Blown Fiber Optics?

It is an alternate fiber optic cable installation method using high-pressure air to blow fiber cables through MicroDucts in limited-access areas.

4. How does the AI assistant retrieve answers?

The assistant uses document embeddings and vector search (e.g., FAISS) to find the most relevant chunks from a knowledge base, then generates an answer.

5. Can the AI assistant work offline?

Yes, if you use a local language model like TinyLLaMA and a local vector DB like FAISS or Chroma.

6. What is the difference between singlemode and multimode fiber?

Singlemode fiber supports long-distance transmission with a single light path, while multimode fiber supports shorter distances with multiple light paths.

7. What should I do if the assistant gives a wrong answer?

Ensure the context document contains the relevant information. If not, the assistant should reply with 'I don't know based on the provided data.'

8. What is a MicroDuct in fiber installations?

A MicroDuct is a small, flexible conduit used to protect and guide blown fiber cables.

9. What is PON in optical networking?

PON stands for Passive Optical Network, which is a point-to-multipoint fiber network with no active components in the signal path.

10. What documents can be used in the AI assistant?

Technical manuals, telecom standards, SOPs, and infrastructure guidelines in PDF or text format are commonly used.

11. What model is best for 4GB RAM laptops?

TinyLLaMA-1.1B or DistilBERT-based models are lightweight and suitable for low-resource devices.

12. How to handle proprietary OEM limitations in fiber installations?

Ensure to get OEM approval during the design phase to avoid vendor lock-in issues.

13. How is context used in RAG models?

The assistant retrieves relevant paragraphs based on vector similarity to the user's question and uses them to generate an answer.

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14. What is FAISS used for?

FAISS is a vector database used to perform fast similarity searches on document embeddings for question answering.

15. How to test if AI assistant gives correct answers?

Use a benchmark set of FAQs and compare AI outputs against known correct answers from the documents.

16. Can the assistant summarize documents?

Yes, if programmed to do so, the assistant can summarize long documents or sections using LLM capabilities.

17. Is LangChain necessary for RAG pipeline?

Not strictly, but LangChain simplifies handling chains like retrieval + generation + prompt templates.

18. What is a TR in telecom infrastructure?

TR stands for Telecommunications Room - a secure room for housing network equipment and termination points.

19. How does blown fiber installation differ from traditional pulling?

Blown fiber is more flexible for future upgrades, while traditional pulling may require more manual labor and disruption.

20. What should be shown in riser diagrams for fiber planning?

TR locations, MicroDuct paths, floor entry points, fiber types and strand counts, and any divergence paths.