

TAKE-HOME ASSIGNMENT: AI TENDER ASSISTANT

AI Engineer Role - Tender & Bidding Agent Implementation

Duration: 1 Week | **Level:** AI Engineer Interview Assignment

THE SCENARIO

PowerBuild Engineering Solutions Pvt. Ltd. is a mid-sized electrical infrastructure company bidding for a high-voltage transmission project worth approximately **100-150 Million**.

The Challenge: Kallam Transmission Limited has issued tender documents (22 PDFs, 500+ pages) for augmentation of Kallam Pooling Station by 2×500 MVA transformers. Your team needs to process these documents quickly and accurately to prepare a competitive bid.

Your Role: AI Engineer tasked with building a **minimal viable prototype** of an AI Tender Assistant that can read tender PDFs and transform them into structured, usable outputs.

Power Project Details:

- **Scope:** LSTK (Lump Sum Turnkey) - Design, Supply, Civil Works, Erection, Testing & Commissioning
- **Location:** Maharashtra, India
- **Equipment:** 2×500 MVA ICTs, 400/220 kV bays, 220kV line bays, 125 MVAR bus reactor
- **Tender Documents:** All PDFs provided (NIT, Technical Specs, Bid Forms, Drawings, Scope of Work)

ASSIGNMENT OBJECTIVE (SIMPLIFIED MVP)

Build a **functional prototype** of an AI Tender Assistant that demonstrates your ability to:

1. Process complex PDF documents using AI/LLMs
2. Extract structured information accurately
3. Generate business-ready outputs
4. Build a simple user interface for practical use

Philosophy: We value a **70% working MVP over 100% theoretical design**. Show us you can ship working software under time constraints.

DELIVERABLES (Minimum 1 of 3 tasks specified below and in the order)

1. Bid Chat Assistant

What to Build: AI-assisted chatbot that could be used in the technical bid submission.

Output Format: Interface to chat with bot related to technical bid documents.

2. Tender Requirement Extractor

What to Build: AI system that reads tender PDFs and extracts key information into a structured format.

Required Outputs (Excel/CSV or JSON):

Column	Description	Example
Document Source	Which PDF it came from	"Technical Specification - Electrical Works.pdf"
Requirement Category	Type of requirement	"Equipment Specification", "Timeline", "Compliance"
Requirement Detail	Specific requirement text	"500 MVA transformer, 400/220kV ICT"
Mandatory/Optional	Classification	"Mandatory" or "Optional"
Compliance Status	Can we meet it?	"Yes/No/Partial/Unknown"

Minimum Requirements:

- Extract at least **50 key requirements** from the tender documents
- Cover multiple categories: technical specs, timelines, documentation, quality standards
- Accuracy target: 80%+ (we'll verify against source documents)
- Include source page numbers for traceability

2. Bill of Materials & Bill of Quantities (BoM & BoQ) Draft

What to Build: AI system that extracts all BoM & BoQ line items from the Bid Price Schedule PDF.

Required Outputs (Excel/CSV):

Item No.	Description of Work	Unit	Quantity	Notes
1	500 MVA, 400/220kV ICT	Nos	2	Inter-connecting Transformer
1A	Ex works supply of equipment	LSTK	1	Including transport & insurance

Minimum Requirements:

- Extract **all line items** from "1. Bid Price Schedule.pdf"
 - Preserve hierarchy (main items, sub-items)
 - Maintain unit and quantity information
 - Flag any ambiguous or missing information
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SIMPLE FRONTEND

Build a **basic interface** for users to interact with your AI Tender Assistant.

Minimum Requirements:

- Upload PDF functionality OR pre-load provided tender PDFs
- Trigger extraction/generation processes
- Display/download generated outputs (Excel, JSON, Word)
- Show processing status/progress

Technology Choice: Your preference

- Web app (Streamlit, Gradio, Flask, FastAPI + HTML, React Js, Next Js, Angular etc.)
- Command-line interface with clear instructions (acceptable but basic web UI preferred)

Bonus Points:

- Cloud deployment
 - Clean, professional UI
 - Error handling and user feedback
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SUBMISSION REQUIREMENTS

1. Complete Working System

- **Code Repository:** GitHub, GitLab, or ZIP file
- **Generated Outputs:** All 3 deliverables (Excel/JSON, Excel, Word/Markdown)
- **README.md:** Setup instructions (step-by-step, assume reviewer is technical but unfamiliar with your stack)

2. Documentation (Brief but Essential)

- **System Architecture Diagram:** Simple visual of your system components
- **Tech Stack & Justification:** Why you chose these tools/libraries
- **Design Decisions:** Key technical choices you made (e.g., which LLM, why?)
- **Challenges & Solutions:** 2-3 problems you faced and how you solved them
- **Limitations:** Known issues or areas for improvement
- **Future Enhancements:** What you'd build with more time

Documentation Format: 1-2 page PDF or detailed README section

GETTING STARTED

Files Provided:

You will receive a ZIP file containing all 22 tender document PDFs (~61 MB):

- Volume-I: Tender Documents (NIT, ITB, BDS, GCC, SCC, Forms)
- Volume-II: Technical Specifications & Drawings
- Volume-III: Bid Forms (including Bid Price Schedule)

TIPS FOR SUCCESS

- **Start Simple:** Get basic extraction working before adding complexity
- **Use the Right Tools:** LangChain, LlamaIndex, or direct LLM APIs (Claude, GPT-4) are good choices
- **Test Iteratively:** Verify your extractions against source PDFs manually at first
- **Document as You Go:** Don't leave documentation for the last day
- **Focus on Outputs:** Business-ready deliverables matter more than sophisticated architecture
- **Show Your Work:** We want to see your problem-solving process, not just the final product
- **Avoid Over-Engineering:** Don't build a production-scale system - MVP is sufficient
- **Don't Hallucinate:** If your AI makes up information, that's worse than incomplete extraction

QUESTIONS?

- **Technical Clarifications:** Email us within 24 hours of receiving assignment
- **Scope Questions:** When in doubt, document your assumptions and proceed
- **File Issues:** If any tender PDFs are corrupted/unreadable, let us know immediately

SUBMISSION DEADLINE

Submit within 7 days of receiving this assignment.

Submission Method:

What to Submit:

1. Link to GitHub repository (public or provide access) OR ZIP file
2. Generated outputs (Excel/JSON files, Word/Markdown narrative)
3. README with setup instructions
4. Brief documentation (PDF or README section)
5. (Optional) Link to deployed demo or video walkthrough

WHAT WE'RE REALLY LOOKING FOR

This assignment tests:

- **Practical AI Engineering:** Can you build working systems with LLMs?
- **Business Acumen:** Do you understand the real problem and build useful solutions?
- **Code Craftsmanship:** Is your code readable and maintainable?
- **Time Management:** Can you deliver under time constraints?
- **Communication:** Can you document your work clearly?

Remember: We're hiring for ability to ship AI products, not academic perfection. Show us you can build something that works and solves real problems.

Good luck! We're excited to see what you build!

Assignment Version: 1.0 | AI Engineer Interview - Tender & Bidding Agent | Target Completion: 1 Week