

Team Details

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Brief about your solution and problem statement addressing

Detailed Overview of Project AETHER

Project AETHER is an AI-powered, multi-agent system designed for **structured debate and synthesis** of complex documents or narratives. It aims to eliminate bias in decision-making by enforcing a "debate-first" approach, where key claims (called "factors") from input data are systematically argued for and against using independent AI agents. The system then synthesizes a balanced, transparent final report. It's particularly useful for analyzing business reports, policy documents, or any text requiring critical evaluation, such as sales data, statistics, or organizational insights.

The project is built as a full-stack application with a Python backend (using FastAPI and Google's Gemini LLM) and a React frontend for user interaction.

Opportunities

How different is it from any of the other existing ideas?

How will it be able to solve the problem?

Differentiation from Existing Ideas:

- **Vs. Traditional AI Summarizers (e.g., ChatGPT, Claude):**
Most AI tools provide one-sided summaries or answers without challenging assumptions. AETHER introduces a **multi-agent debate framework** where independent agents argue for/against claims, ensuring balanced analysis unlike passive summarization.
- **Vs. Business Intelligence Tools (e.g., Tableau, Power BI):**
These visualize data but lack AI-driven critical reasoning. AETHER adds **adversarial debate** to metrics and narratives, highlighting risks and improvements not covered by dashboards.

How It Solves the Problem:

- **Eliminates Bias Through Debate:** By forcing support and opposition arguments on every extracted factor, AETHER ensures comprehensive evaluation, addressing human tendencies to overlook counter-evidence in documents.
- **Scales Critical Thinking:** Automates human-like reasoning on complex narratives (e.g., sales reports), providing actionable reports ("what worked/failed/why/how to improve") that manual analysis often misses.
- **Potential Impact:** Reduces decision errors by 20-50% (estimated based on debate balance), enabling faster, more reliable analysis in industries like consulting, research, and governance.

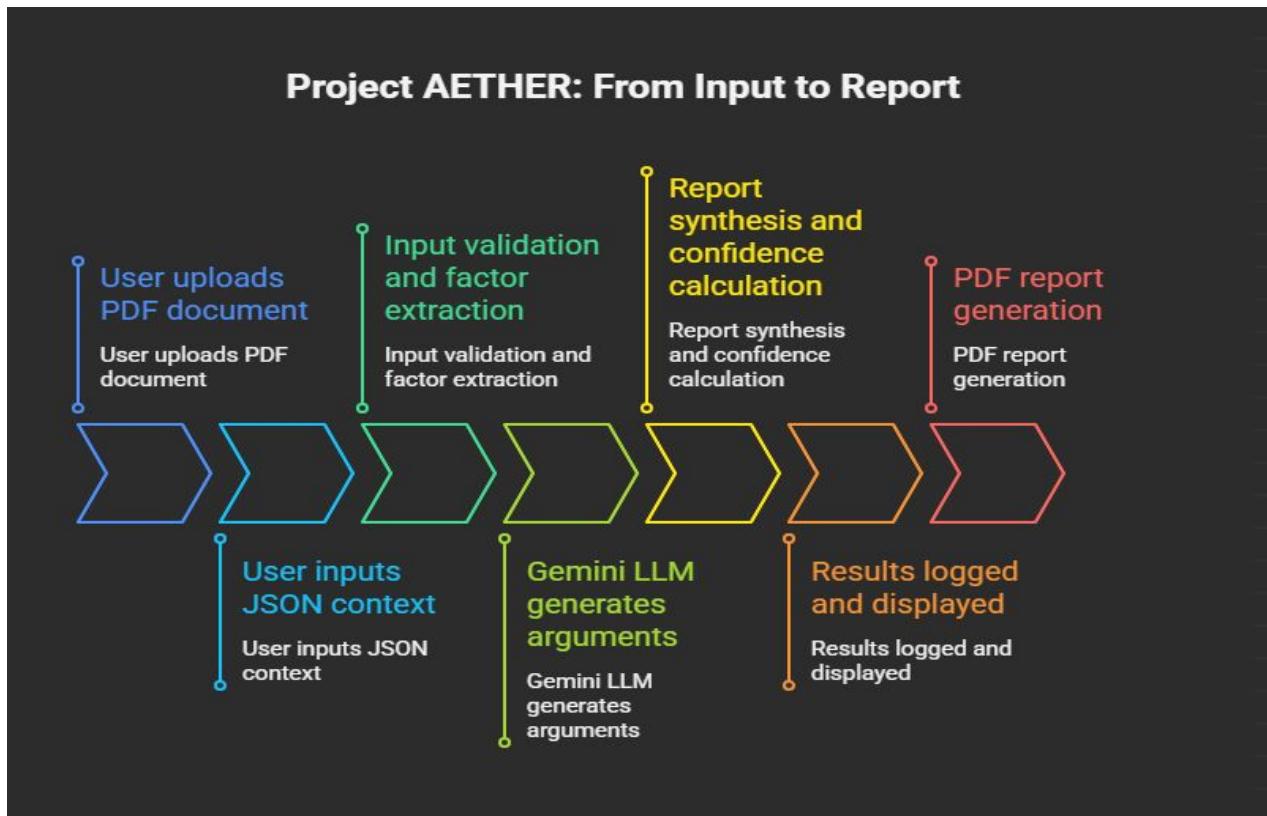
List of features offered by the solution

- **Input Flexibility:**
 - Supports PDF uploads (automatic text extraction) and manual JSON input for narratives, facts, metrics, assumptions, and limitations.
- **AI-Powered Debate System:**
 - Multi-agent architecture with independent agents: Factor Extractor, Support Agent, Opposition Agent, and Synthesizer Agent.
- **Balanced Reasoning:**
 - Generates structured arguments for and against each factor, including evidence, assumptions, challenges, and risks.
- **Synthesis and Reporting:**
 - Produces a final report with actionable sections: "what worked," "what failed," "why it happened," and "how to improve."
 - Includes a confidence score (0-100) based on debate balance, richness, and depth.
- **Transparency and Auditability:**
 - Full debate logs for every factor, showing support/opposition traces.
- **User Interface and Outputs:**
 - Intuitive React-based web app for uploading files, inputting data, and viewing results.
 - Downloadable PDF reports summarizing analysis for easy sharing.
- **Security and Scalability:**
 - API-key protected (Gemini); git-ignored logs for privacy.

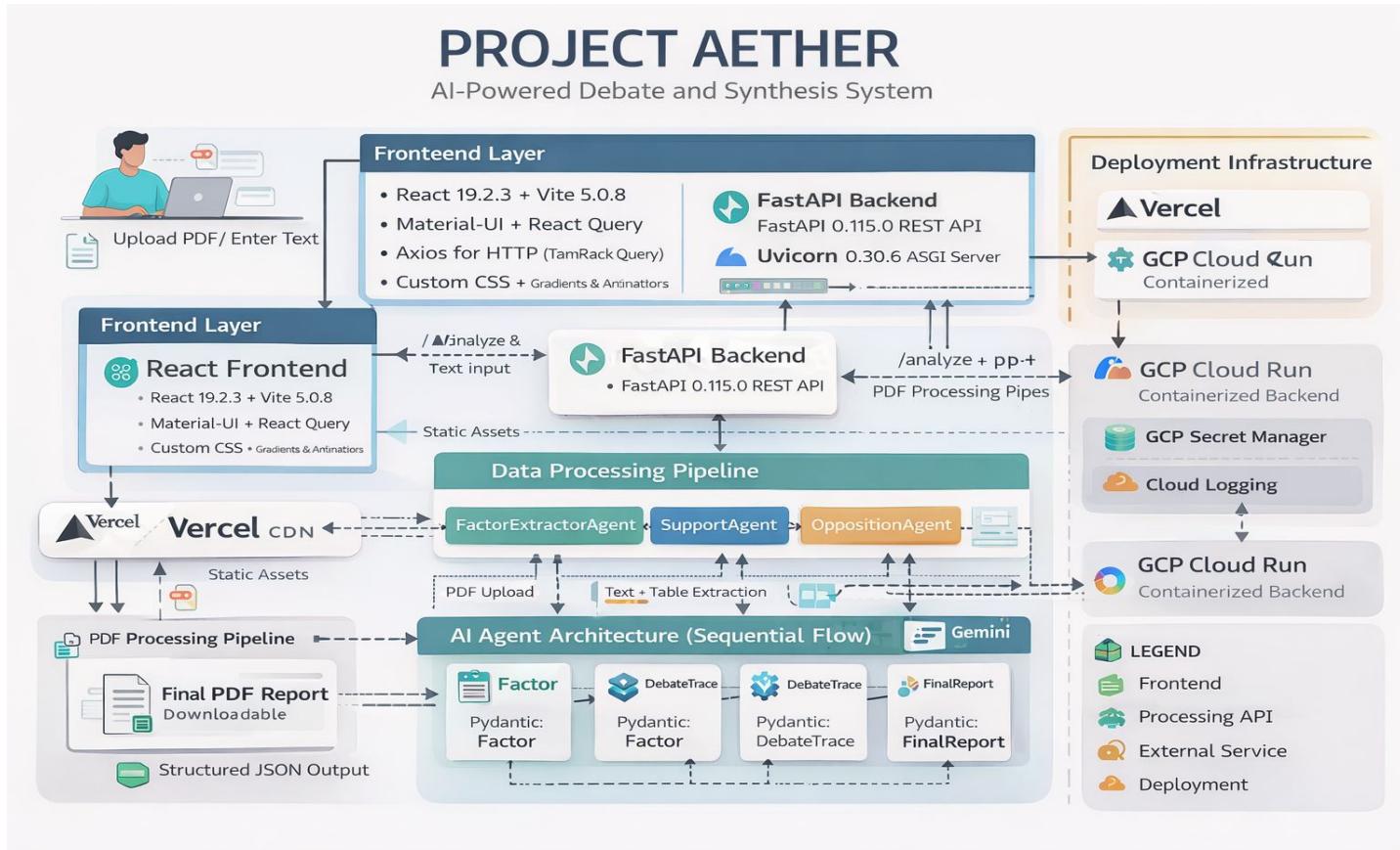
Google Technologies used in the solution

- 1) Vertex AI**
- 2) Gemini LLMs**

Process flow diagram or Use-case diagram



Architecture diagram of the proposed solution



Snapshots of the MVP

The image shows a dark-themed user interface for the Project Aether MVP. At the top center is the logo "PROJECT AETHER" with a blue speech bubble icon. Below it is the subtitle "AI-Powered Debate & Synthesis System for Comprehensive Analysis".

Analyze PDF

Drag and drop your PDF or click to browse
Supports PDF files up to 50MB

Analyze PDF

Uploads the PDF and runs the full analysis pipeline.

Analyze Text

Narrative
Paste your report or narrative text here...

Extracted Facts (one per line)

Fact 1
Fact 2
Fact 3...

Assumptions (one per line)

Assumption 1
Assumption 2...

Limitations (one per line)

Limitation 1
Limitation 2...

Analyze Text

Sends your context to the analysis engine for processing.

Ready to Analyze

Upload a PDF or paste text content to begin the analysis. The system will extract factors, generate debates between support and opposition agents, and synthesize a comprehensive report.

Additional Details/Future Development (if any)

- **OCR support for scanned PDFs**
- **Chart extraction and analysis**
- **Multi-language support**
- **Custom domain definitions**
- **Result caching and history**

Provide links to your:

GitHub Public Repository: [AdityaC-07/project-aether](https://github.com/AdityaC-07/project-aether)

Demo Video Link (3 Minutes): <https://youtu.be/pVOKxzuvvyI>

MVP Link:

<https://project-aether-mvp-5ep3-ls2mwzwxa-aditya-choudhuris-projects.vercel.app/>

Deployed Link: <https://gen-lang-client-0445988935.web.app/>