

Assignment 2: Gen AI Apps for Business

Due: Wednesday, April 16 @ 11:59 PM on Blackboard

Scenario

Lewisville Community Alliance (LCA) is a non-profit organization dedicated to addressing critical social challenges, including education inequity, food insecurity, affordable housing, and environmental sustainability. LCA operates through several key programs: Youth Development, Food Access, Volunteer Engagement, Advocacy & Policy, and Environmental Conservation.

Recognizing the potential of technology to amplify their mission, LCA's Board of Directors is exploring how Generative AI can transform operations, improve outreach, and maximize impact. However, the staff across departments are unsure how to effectively leverage AI for their unique needs and goals. To address this, the Board has launched a pilot project and formed an internal task force to design and propose preliminary Gen AI solutions tailored to the organization's departments.

Assignment

You are a member of the internal task force. Choose one of the departments outlined on the final page of this document and design an LLM application to meet its needs and goals. Your proposed design should be creative, clearly communicated to a non-technical audience, and show an understanding of Generative AI's potential to provide business solutions and drive social impact. It should also include a working prototype created in Python of an element of the design (further description below).

Deliverables

You will be submitting your proposal in a slide deck that will be sent out to the departments and Board of Directors for their review. Your slide deck should clearly present your application design, functionality and value proposition, a prototype demonstration, and any potential implementation challenges.

Slide Deck Structure:

Note: The following is a guideline. Feel free to adapt to better suit your vision!

- **Department Needs and Application Vision (1-2 slides)**
 - Summarize the department's primary needs.
 - Present the overarching vision for your proposed Gen AI application, highlighting its intended impact.
- **Application Design and Functionality (2-3 slides)**

- Describe how your Gen AI application is intended to function. Include visual aids like mock-ups, diagrams, or schematics to support your explanation.
- Assume the audience understands the business well but may not be familiar with Gen AI technologies.
- **Prototype Demonstration (1-3 slides)**
 - Show screenshots from your application prototype in action, demonstrating specific examples of inputs and outputs.
 - Your prototype should illustrate one (or more) elements of your application design but it does not need to cover every feature. For example, if your design includes an LLM application with one or more LLM prompts as well as some API calls that gather real-time information from the internet, your prototype could be working code for one of the LLM prompts, with some “mock-up” input to show how it works.
 - If your design involves Gen AI prompts or real-time data gathering, you may showcase a working example of an AI prompt with hypothetical inputs.
 - Accompanying your slide deck, submit **a Python Jupyter Notebook file** containing your prototype code (**Please DO NOT include your API key in your code submission**).
- **Value Proposition and Solutions (1 slide)**
 - Discuss the value your Gen AI application brings to the department, focusing on efficiency gains, cost reductions, customer satisfaction improvements, or revenue growth opportunities.
 - Explain how your application addresses the identified needs of the department.
- **Implementation Challenges and Risks (1 slide)**
 - Identify potential obstacles in deploying your application or risks that might affect project success. Suggest ways these challenges might be mitigated.

Gen AI Policy

- You may use ChatGPT or any other AI tools to help you create your assignment. I encourage you to use ChatGPT or another Gen AI tool to generate examples or hypothetical inputs or data for your application.

Grading

- Your work will be graded according to the rubric below
- **Creativity (30 Points)**
 - Innovation (15 Points): How innovative is the proposed Gen AI solution? Does it introduce a new approach or idea to the department's operation?
 - Applicability (15 Points): How well does the solution incorporate NLP into its design and functionality? Is the use of NLP effective for the end use? Do the

NLP capabilities integrate well with the other functions of the application? Are the design choices for NLP appropriate for the technology?

- **Business Needs & Value (40 Points)**
 - Alignment with Business Needs (20 Points): How well does the Gen AI solution address the identified organizational need? Is it relevant and directly beneficial to the chosen department's objectives?
 - Potential for Value Creation (20 Points): Does the solution have the potential to create significant value for LCA? This includes improving operational efficiency, reducing resource waste, increasing community engagement, expanding the reach of services, or enhancing the organization's overall impact on the community
- **Working Prototype (30 Points)**
 - Functionality (15 Points): Does the prototype function as intended? Is it capable of performing the tasks it was designed for without significant issues?
 - User Experience (15 Points): Is the prototype user-friendly and accessible to its intended users? Does it provide a clear, intuitive interface that supports its operational goals?

Departments and AI Solution Proposals (Choose 1 of the following 5 options)

1. **Youth Development: Personalized Educational Content Assistant**
 - **Need:** The Youth Development team provides after-school programs for underserved communities but struggles to deliver personalized educational materials that cater to diverse learning needs.
 - **Solution:** A Gen AI application that generates customized learning plans, lesson content, and activity suggestions based on student profiles, interests, and progress.
2. **Food Access: Donor and Distribution Management Tool**
 - **Need:** The Food Access program coordinates food donations and distribution to food-insecure households but faces challenges in efficiently matching donations to community needs.
 - **Solution:** A Gen AI application to streamline donor communication, predict food demand trends, and optimize distribution schedules for maximum community impact.
3. **Volunteer Engagement: AI-Powered Volunteer Coordinator**
 - **Need:** Recruiting, onboarding, and scheduling volunteers for events is labor-intensive, leading to underutilized volunteer resources.

- **Solution:** An AI assistant that automates volunteer matching, generates personalized communication to improve engagement, and schedules volunteers based on availability and program needs.

4. **Advocacy & Policy: Narrative and Outreach Generator**

- **Need:** The Advocacy & Policy team seeks to raise awareness about social issues and influence policy decisions, but struggles to produce compelling, data-driven narratives and outreach materials quickly.
- **Solution:** A Gen AI-powered tool that generates persuasive policy briefs, social media content, and outreach materials using real-time data and key messaging themes.

5. **Environmental Conservation: Grant Proposal Writing Assistant**

- **Need:** The Environmental Conservation team relies heavily on grants for funding but struggles with the time and expertise required to craft compelling proposals.
- **Solution:** A Gen AI system that drafts tailored grant proposals by analyzing funder priorities and incorporating relevant project details, significantly reducing the time required for submissions.