Comp 523 Project

ChicoryLane ChatBot 2.0:
An AI-Based Exploratory Project
Client: John B. Smith (ChicoryLane Foundation)

Project Description

- **Starting point.**
  Rapid advances in AI are creating a genuine shift in how we approach use cases, requirements, system design, and implementation. These methods already differ from traditional practice and will likely define future practice.

- **Background.**
  During Fall 2025, a CompSci 523 team created a RAG-based chatbot for the ChicoryLane Foundation. The system ingested about 30 documents from the Foundation's website, tokenized them, and supported queries about ChicoryLane and its broader ecological and organizational context based upon the ingested material and its general knowledge base..

- **Project goals.**
  This project will extend that earlier work and move it to an AI platform that includes agentic capabilities. Key questions include:

  - Can the system assist with requirements development?
  - Can it infer new capabilities or use cases through its agentic behavior?
  - Is its generated code viable, and is this approach more efficient than hand-written code?

- **Exploratory evaluation.**
  The project will also examine data omissions, completeness, and distortion. To do this, the team will work with a structured, comprehensible knowledge base. For example, the domain data may represent the ecology of a specific conservation reserve (ChicoryLane) and the ideas guiding its improvement. With this understanding, the team can judge how well the system handles sequences of queries—whether it includes key information, balances it appropriately, or omits relevant elements.

- **Process reflection.**
  Throughout the project, the team will examine how the system contributes to its own development process:

- Can the base ai system (.g., Genesis) help define requirements, design and implement components in an augmented system, and propose improvements?
- Does familiarity with the domain data help student developefrs prepare and ingest new data more efficiently?
- Does that understanding also help them evaluate the accuracy and usefulness of system responses?
- Are there inquiry patterns that yield more reliable or complete answers?

- Stack

The Fall 523 project was built using largely using open source and freeware AI components. The Spring project will attempt to use a mainstream vertical stack. A project task will be to evaluate current system options, identify reduced price or free options for stack components, and produce an architectural and cost-based evaluation of development options and anticipated costs. Any license fees will be negotiated with the client and paid for by the client. Example stack might include:

- Chrome
- Vertex AI Gemini
- Vertex RAG
- Vertex AI Agent Builder, etc.
- Google Docs
- Google Drive

Conclusion

UNC Computer Science has a long history of focusing on intelligence amplification—tools that extend human capability—rather than autonomous artificial intelligence. This project is located within that tradition. The aim is not to choose between human control and machine autonomy but to explore the productive space between them.

We are entering a period where collaboration between people and IA systems may offer the most effective path forward: iterative, incremental, and guided. We provide direction; the system performs much of the work. With time, as both sides “learn,” less direct control may be needed. The dynamic is similar to riding a horse: not walking the ground ourselves, but guiding another capable being.

Key themes include:

- the role of IA systems as tools rather than independent actors;
- the shifting boundary between human guidance and machine execution;
- the evolving ethics and integrity of human-AI collaboration;
- and the idea that understanding the development process is as important as the final application.