

AI Testing Methodology

Jefferson County Business Innovation & Technology

3–5 students

Company background

Jefferson County Business Innovation & Technology (BIT) provides technology-based information systems and communication services to the County and its residents so they can accomplish their business objectives. BIT supports Jefferson County’s vision of innovative, efficient, equitable, and quality public services through innovation, collaboration, and efficient and secure service delivery. The Innovation Team partners with County departments to evaluate and implement technologies that improve services, strengthen data-informed decision-making, empower employees, and advance strategic collaboration.

Problem statement

How might we improve our AI testing methodology to better identify risks such as bias, hallucinations, harmful outputs, privacy issues, and security vulnerabilities?

Problem context

Large language models are increasingly used to support search, drafting, analysis, customer service, and workflow automation. As adoption grows, organizations need repeatable testing methods to evaluate whether AI systems produce accurate, safe, equitable, and secure outputs. Current guidance from NIST emphasizes structured AI risk management and testing, evaluation, verification, and validation for trustworthy AI systems.

Description of the work to be done

- Work with Jefferson County stakeholders to understand current AI testing needs, priority use cases, and the types of risks that should be evaluated.
- Review relevant NIST guidance and translate applicable concepts into a practical, repeatable testing workflow for large language model applications.
- Design and develop a methodology or technological solution that helps staff organize test cases, execute evaluations, record results, and compare system behavior over time.
- Incorporate ways to evaluate risks such as bias, hallucinations, harmful outputs, privacy issues, and security vulnerabilities while recognizing that different risks may require different tests and review methods.
- Create clear outputs that help staff understand findings, document evidence, and determine where additional human review or risk mitigation may be needed.
- Test the methodology or solution for usability, repeatability, and usefulness, and document its assumptions, limitations, and opportunities for continued development.

Desired student skill set

Students are expected to learn new technologies and languages during the course. The following interests or skills would be helpful, but are not intended as prerequisites:

- Interest in artificial intelligence, software testing, quality assurance, cybersecurity, privacy, or responsible technology.
- Experience or interest in API integration, test automation, data analysis, and interface development.
- Ability to research technical guidance and translate it into practical requirements, test cases, and documentation.
- Comfort learning new technologies, libraries, evaluation methods, or programming languages as needed.

Work location and participation

Jefferson County Business Innovation & Technology is located at 3500 Illinois Street, Laramie Building – Suite 2500, Golden, Colorado 80419. The expected remote, hybrid, or on-site work arrangement has not yet been specified and should be confirmed before submission. If on-site work is required, mileage expectations should follow the course guidance.

Confidentiality and intellectual property

No non-disclosure agreement requirement has been specified. No requirement to assign intellectual property rights to Jefferson County has been specified; under the course's stated default, students will retain ownership of their work and all artifacts produced unless the proposal is updated before submission.