IE7945: Capstone Project Proposal

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1. Project Title

Insert the title of your project here.

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2. Project Overview

2.1 Project Description

Provide a brief introduction to the project and explain the main problem or opportunity the project addresses. Summarize the key objectives.

Example:

This project aims to develop a machine learning-based solution to optimize [XXXX] in collaboration with [Industry Partner Name]. The project will explore data-driven optimization techniques to improve print quality and reduce defects.

2.2 Project Objectives

List the specific objectives or goals of the project. These should be measurable and achievable.

- Objective 1: Develop a machine learning model to predict defects in real-time.
- Objective 2: Improve the current workflow by integrating AI-driven solutions.
- Objective 3: Conduct performance tests with actual [XXXX] provided by [Industry Partner Name].

2.3 Industry Relevance

Explain why this project is important for the industry partner and the industry at large. Discuss how the project aligns with industry needs or challenges.

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3. Project Scope and Deliverables

3.1 Project Scope

Define the scope of the project, including the main areas of focus, tools, and methodologies.

- Scope:
    - **Data Collection**: Gather print data from [XXXX].
    - **Model Development**: Design and train a machine learning model to predict anomalies.
    - **Integration**: Deploy the solution in the industry partner's production environment.

3.2 Key Deliverables

List the key deliverables expected at the end of the project.

- A machine learning model for real-time defect prediction.
- Documentation and reports on project findings.
- Integration of the solution into the partner's workflow.
- Presentation/demo for the industry partner and academic team.

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4. Resources and Tools

4.1 Tools/Technologies

List the software, tools, and technologies needed for the project.

- **Programming Language**: Python, PyTorch
- **Data Analysis**: Pandas, NumPy
- **Cloud Services**: AWS, Google Cloud, Azure for model training
- **Hardware**: Access to [Industry Partner Name] [XXXX]

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5. Timeline and Milestones

Provide a timeline for the project with important milestones.

Milestone	Deadline
Data collection complete	Week 4
Model development	Week 8
Initial testing	Week 10
Integration and final testing	Week 12
Final presentation	Week 14

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6. Team and Roles

6.1 Student Roles

List the roles of each team member and their responsibilities.

- **Student 1**: Data Collection & Preprocessing
- **Student 2**: Model Development
- **Student 3**: Integration & Testing
- **Student 4**: Documentation & Reporting

6.2 Industry Partner Involvement

Define the role of the industry partner in the project.

- **[Industry Partner Name]**: Provide [XXXX] and data, offer feedback on model performance, and assist with testing and integration.

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7. Risk Management

Identify any potential risks and the strategies to mitigate them.

Risk	Mitigation Strategy
Insufficient data for training	Partner with industry for more data access
Difficulty integrating the solution	Collaborate closely with the industry partner's technical team

8. Expected Outcomes and Benefits

Describe the expected outcomes of the project and how the industry partner will benefit.

- Improved accuracy in detecting defects during the [XXXX] process.
- Reduced production costs due to early defect detection.

9. Budget (If Applicable)

If necessary, outline the budget required for the project.

Item	Cost
Software Licenses	$XXX
Cloud Services (AWS)	$XXX
Other expenses	$XXX

10. Conclusion

Summarize the importance of the project and its potential impact on the industry. Express commitment to delivering high-quality work in collaboration with the industry partner.