

# Computer Science Capstone Topic Approval Form

The purpose of this document is to help you clearly explain your capstone topic, project scope, and timeline. Identify each of these areas so that you will have a complete and realistic overview of your project. Your instructor cannot sign off on your project topic without this information.

*Note: You must fill out and submit this form. Space beneath each number will expand as needed.*

*Note: Any costs associated with developing the application will be the responsibility of the student.*

## INFORM INSTRUCTOR:

Potential use of proprietary company information: (Y/N) **No**

## ANALYSIS:

1. Project topic and description:  
**Image classification of jellyfish by species.**
2. Project purpose and goals:  
**Build Convolutional Neural Network model to classify images of jellyfish by species. This can be used on unlabeled data after validation to help identify ocean photography identify species for ecological health counts.**
3. Descriptive method:  
**Calculate mean and mode of occurrence for each species (non-ML); this can be used as a measure of validation against reported occurrence.**
4. Predictive or prescriptive method:  
**Classify images into species based on visual factors using CNN machine learning methods.**

## DESIGN and DEVELOPMENT:

1. Computer science application type (select one):
  - Mobile (indicate Apple or Android)
  - Web
  - **Stand-alone**
2. Programming/development language(s) you will use:



**Python, including PyTorch library, in Jupyter notebooks.**

3. Operating system(s) or platform(s) you will use:  
**Built in Windows 10 but aims to be OS-agnostic.**
4. Database Management System you will use:  
**This project will use file-based storage in labeled directories, as the initial dataset only contains around 1,000 images.**
5. Estimated number of hours for the following:
  - i. Planning and design: **3**
  - ii. Development: **16**
  - iii. Documentation: **4**
  - iv. Total: **23**
6. Projected completion date: **01/26/24**

**IMPLEMENTATION and EVALUATION:**

1. Describe how you will approach the execution of your project.  
**The topic (image classification of jellyfish by species) was used to develop a business need: classification of jellyfish species for ecological purposes. This model can be extended to include additional species over time with additional training data.**

**This project**

- ☒ **This project does not involve human subjects research and is exempt from WGU IRB review.**

**STUDENT'S SIGNATURE**



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By signing and submitting this form, you acknowledge that any costs associated with the development and execution of the application will be your (the student's) responsibility.





Charles Paddock

**INSTRUCTOR'S SIGNATURE:**

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**INSTRUCTOR APPROVAL DATE: 1/5/2024**

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