**Project Planning Worksheet**

To pass this course, you'll need to create a project that matches this criteria:

*"Based on your understanding of the material, you're required to build and submit an open-source project that uses NVIDIA Jetson and incorporates elements of AI (machine learning or deep learning) with GPU acceleration, along with a video demonstrating the project in action. For example, you could collect your own dataset and train a new DNN model for a specific application, add a new autonomous mode to JetBot, or create a smart home / IoT device using AI - these need not be limited only to topics covered in the course. For inspiration, see the* [*Jetson Community Projects*](https://developer.nvidia.com/embedded/community/jetson-projects) *page - the possibilities are endless!"*

To pass the certification, your project will be reviewed based on the following criteria:

* **AI (5 points)** - The project uses deep learning, machine learning, and/or computer vision in a meaningful way and demonstrates a fundamental understanding of creating applications with AI. Factors include the effectiveness, technical complexity, and performance of your AI solution on Jetson.
* **Impact / Originality (5 points)** - The concept of your project is novel and applies AI to solve or address challenges or issues faced by yourself or society. Also, our ideas and work are either original or derivative in a significant way.
* **Reproducibility (5 points)** - Any plans, code, and resources needed for someone else to build and use the project are included in the repository and are easy to follow.
* **Presentation and Documentation (5 points)** - The video effectively demonstrates and explains various aspects of the project, and there exists a clear, complete README in the repository that documents any steps needed to build/run the project, along with diagrams and images.

Follow these steps to plan out your project

## Part One: Brainstorming

Write down 3-5 ideas for problems that you see in the world around you that you could create an AI to help solve. You can use [student example projects](https://docs.google.com/document/d/1qbBLDkW3-SwLu7tWY_Q1qZnuGC5miO8y-oHWKxU4_10/edit?usp=sharing) or [community example projects](https://developer.nvidia.com/embedded/community/jetson-projects) for inspiration or look back on past lessons that you enjoyed.

1. Not REALLY a problem, but a number recognizing AI would be a challenge.
2. Correct object recognition, but if google can’t do it (well they can, but not that well), I doubt I can. Also I don’t think ReCaptcha data is public. If I were to code something that complex, I would need a reliable dataset. ReCaptcha would be great but I understand wanting to keep it private.

1. LLM/Generative AI/Chatbot to solve problems I’m too lazy to fix.



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## Part Two: Details

Write down the answers to these questions for your **two** **favorite** ideas:

**AI**: How would the AI work? Technically speaking what kind of network is it and how does this network work?

Idea 1: Number recognizing AI

OPTION 1: Image recognizer

PROS:

Easy

Cool

CONS:

Only 1 number

I could just modify some code I've already made and it would probably be done.

OPTION 2: Object Detection

PROS:

Even cooler

Multiple numbers

CONS:  
 Maybe impossible. I don’t believe NVIDIA DIGITS works on the nano.

Hard. Very, very hard.

Even harder without DIGITS because I can’t use a pre-built model like DetectNet.

Idea 2: Chatbot

I don’t really WANT to. I have little passion, and using a module like chatterbox seems like cheating, but realistically, it's not possible without it.

**Impact**: What impact would this project have? Who does it impact and in what ways?

Idea 1: Recognizing numbers could be helpful in a load of ways. Reading of a page of text, OCR, photo and screenshot apps that let you copy text, and probably more. It probably wouldn’t help much as there are better options then using mine, but still quite rare (excluding OCR).

Idea 2: It will probably help very little due to it being overshadowed by ChatGPT, Copilot, Phind, Gemini, Tabline, and more. (Unlike the former which, shockingly, is quite hard to find one. Albeit, the ones you find are usually outstanding in the field.) It would get me knowledge in the field of LLMs and chatbots though. If we ignore my first statement and act like my chatbot would be ‘revolutionary’, in a sense, it could be quite significant to be able to have your questions be answered by a bunch of technological neurons inside a layer of a Large Language Model.

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## Part Three: Resources

Now that you have thought out the impact and technical aspects of how the AI will work, it is time to map out what resources are going to be needed to complete your project.

**Docs from jetson-inference**: Add your documentation or tutorial link below

[DetectNet](https://github.com/dusty-nv/jetson-inference/blob/master/docs/detectnet-training.md)

[DIGITS setup](https://github.com/dusty-nv/jetson-inference/blob/master/docs/digits-setup.md)

**Example code:** Add your example code below

[Letter Digit Classification](https://github.com/IEEEFiratComputerSociety/Letter_Digit_Classification)

**Datasets**: If applicable, add the dataset that you will be using below

MNIST dataset

**Miscellaneous**: Add any other resources you might need for your project below.

The entire Docker documentation.

NVIDIA container toolkit docs

NVIDIA-docker docs

## Part Four: Documentation

I'm going to wait until I am done to fill this out so I have more points

**Video**: Write down any key points that you want to add into your video below



**Documentation**: Write down any key points that you want to make sure are in your readme doc.



**Reproducibility**: How could your project be reproduced or run on another machine. Make sure to remember all steps that make your project work.



**Definitions and Legal References** (I don’t wanna get sued so here ya go!)

DIGITS - [NVIDIA® DIGITS®](https://developer.nvidia.com/digits)

Gemini - Formerly Bard  
Phind - [Phind®](https://www.phind.com/) (Possibly trademarked. Really hard to tell. I assume yes.)

Copilot - [Microsoft Copilot®](https://copilot.microsoft.com)

MNIST - [MNIST®](https://yann.lecun.com/exdb/mnist/) (Possibly trademarked. I assume yes.)

Docker - Docker, Inc.