Proposal Template – Fill out the below table and submit as pdf to Gradescope.

ENGR 133 Fa23 Individual Project Proposal	
Full Name (Purdue login)	Siddarth Calidas (scalidas@purdue.edu)
Section - Team Number	LC4-17 ; x – section number (1,2,3,4,5), yy – team number (01 to 30)
Programming Language	Python
Project Theme	ML model that predicts the character a user has drawn in a tkinter window
Proposal Description	Text that meets the items in the rubric: Project proposal is well-written and fully conveys: 1) how you plan to meet the goals of the project, 2) makes connections to personal interest, major or future career, 3) and has few or no grammar and spelling mistakes. For a while, I've had an idea to make a simple little application where the user can draw a character with their mouse or on a screen, and a machine learning model will predict which character they've drawn. I know of an open-source dataset called MNIST which contains thousands of handwritten digits, and is built into TensorFlow making the training easier. Furthermore, good model architectures are openly available, so I have a lot of information to get started with. I have trained a model on the MNIST fashion dataset, and changing the CNN to be accurate on MNIST digits shouldn't be too difficult. I then want to make a window where the user can draw a character with their mouse, saves the image as a matrix and runs the prediction on it. The weights will be saved, so running a prediction should be as easy as loading Keras and importing the weights. The window will probably be made with tkinter, with a tkinter.canvas for the drawing. This drawing window should cover the user input requirement. It will output by printing the drawn character to the command window. There will be a few files. One will be the code for training the TensorFlow model, one will be the class for the Tkinter window and the last will be the main script. At some point, probably during the data processing for training, I will be using a for loop, if statement and matrix. It should probably have a nested for loop, although I guess I can't predict just yet. I cannot easily check if the user input resembles a digit or not, but I can verify that the image sent is of the right dimensions. I will request an exception if there is no other place for me to implement input checking

	As a computer engineering major, one thing I will be studying a lot is machine learning. Also, I plan on doing a minor in AI/Machine Learning. Furthermore, my VIP team is working on a machine-learning accelerated microcontroller, so safe to say I'll be exposed to machine learning a lot. ML is a topic which has interested me for a while, because I think its so cool that a computer, powered by only electricity can think like a human. I would like to pursue a job in this area, and getting some early exposure could be useful. This specific thing is a project I've been thinking of for a little bit, so doing it to fulfill this assignment would be nice.