

Lab Setup

Background

Core learning objectives for this lab:

1. Setting up Kiro + cmu_graphics on your device
2. Using AI agents and keeping track of tokens

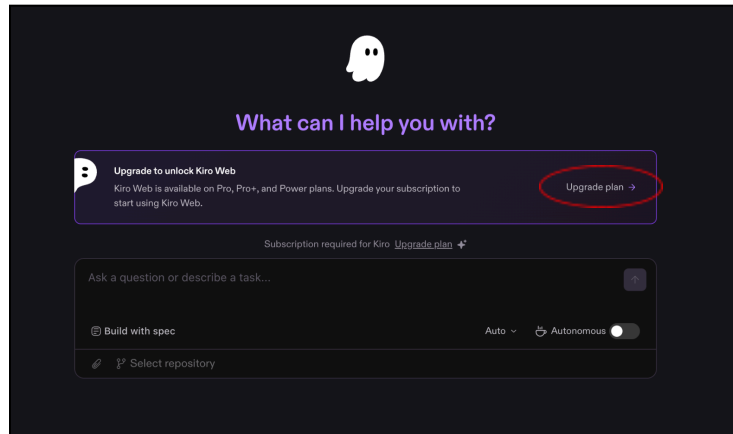
NOTE: Please read all instructions in this document carefully and closely! These instructions build on each other sequentially, and errors in earlier sections can prevent you from completing tasks later on in this document.

Setting Up Kiro & cmu_graphics

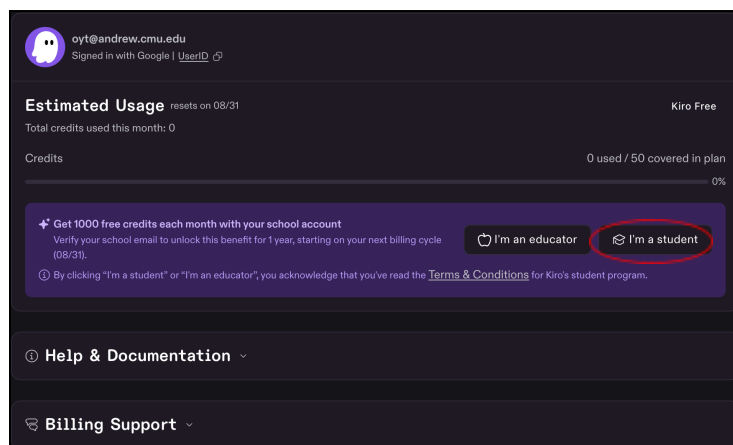
Throughout this semester, we'll routinely be using **Kiro**, an agentic AI-powered code editor, which will allow you to write code and execute AI prompts in the same program. We'll also be introducing **cmu_graphics**, a custom Python animation library developed at CMU.

Approving Kiro Credits

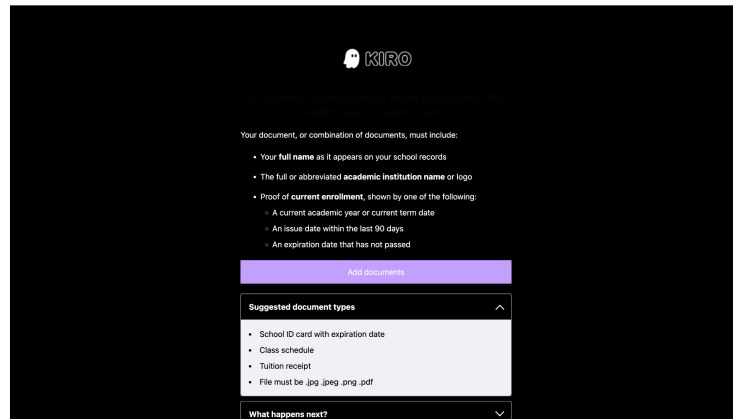
1. First, follow [these instructions](#) to register for a Kiro student account **using your CMU email ending in @andrew.cmu.edu** and get verified.
2. Logging in should take you to a chat interface. From here, follow these instructions:
 - a. Click on “Upgrade plan”:



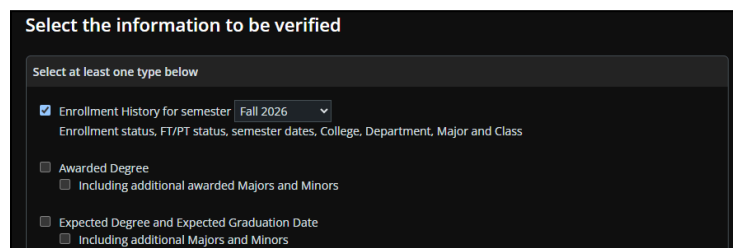
- b. Click on “I’m a student”:



3. Kiro will send you an email about verifying your account. Click the link inside this email.
 - a. If you receive an error message (i.e. “We are unable to verify you at this time”), refer to [this section of the lab](#). Otherwise, you should see the following screen:



4. Prepare a document to submit. Any of the suggested document types suffice, but we specifically recommend using SIO to get a PDF of your enrollment status.
 - a. Go to SIO, and then under “Academic Info” go to “Enrollment Status”.
 - b. On the right side, click the link that says “Request Enrollment Verification”.
 - c. Select the first option that says “Enrollment History for semester...” and make sure that “Fall 2026” is selected (or “all semesters”).



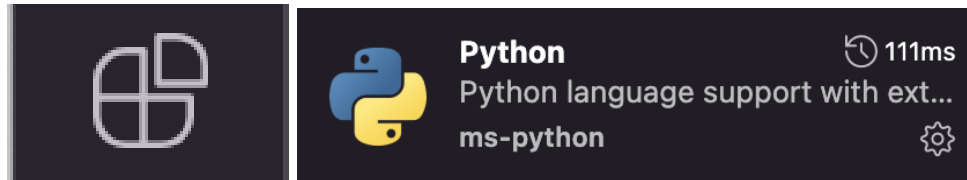
- d. Hit “Next” until you see an option to submit. You can disregard any fields that ask you to provide information.
 - e. Before submitting, make sure pop-ups are **enabled**. (If you’re having trouble checking this, look up how to enable pop-ups/redirects in your specific browser).
 - f. Submit, and wait for the PDF to appear in a new tab. You can use this document to verify your student account.
5. After uploading, Kiro will verify your account (typically within a couple of minutes) and send you another follow-up email. Once you get this email, you should be ready to go!

Installing Kiro + Configuring Settings

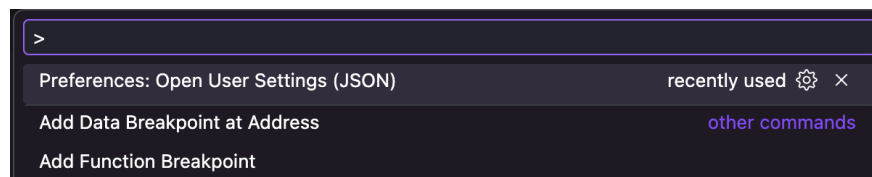
1. First, install the Kiro IDE [here](#).
2. Go to the [official Python website](#) and scroll down to the section labeled “Looking for a specific release?”
 - a. Look through the release history, and install any version starting with “Python 3.13.” (i.e. 3.13.12). **If you are installing on Windows**, be sure to check the box that adds Python to your PATH!
 - b. **Note:** 3.10 should read 3.13 in the image below.

- ☒ Install launcher for all users (recommended)
- ☒ Add Python 3.10 to PATH

3. Back in Kiro, click on the “Extensions” tab on the left toolbar (the four rounded quadrants).
 - a. Type “Python” into the search bar and install the extension by **ms-python** simply named **Python**.
 - b. **Note:** What you see on your screen might look slightly different from our screenshots (colors, icons, etc.) depending on your operating system, updates, and cosmetic settings.



4. Use cmd+shift+p (Mac) or ctrl+shift+p (Windows) to open the Command Palette.
 - a. Type in “Settings”, then click on “**Preferences: Open User Settings (JSON)**” (or “**Preferences: Open Settings (JSON)**” if you see that instead).



5. Paste these settings into **settings.json** (the page that opens up), replacing the settings that are there.
 - a. Save these settings by hitting Save under File in the top left, or use cmd+s (Mac) or ctrl+s (Windows).

JSON

```
{
  "window.zoomLevel": 0,
  "editor.fontSize": 18,
  "terminal.integrated.fontSize": 18,

  "python.terminal.executeInFileDir": true,
  "python.terminal.launchArgs": ["-i"],
  "python.linting.pylintEnabled": false,

  "editor.quickSuggestions": {
    "other": false,
    "comments": false,
    "strings": false
  },
  "editor.acceptSuggestionOnEnter": "off",
  "editor.quickSuggestionsDelay": 10,
  "editor.wordBasedSuggestions": "off",
  "editor.parameterHints.enabled": false,
  "editor.rulers": [80]
}
```

6. Reopen the Command Palette using cmd+shift+p (Mac) or ctrl+shift+p (Windows).
 - a. This time, type in “Keyboard Shortcuts” and click on **“Preferences: Open Keyboard Shortcuts (JSON)”**.
 - b. **Note:** make sure this is not “Preferences: Open Default Keyboard Shortcuts”.

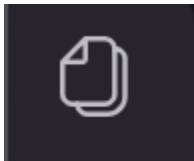
7. Paste these settings into **keybindings.json** (the page that opens up), replacing the settings that are there, and save again.

JSON

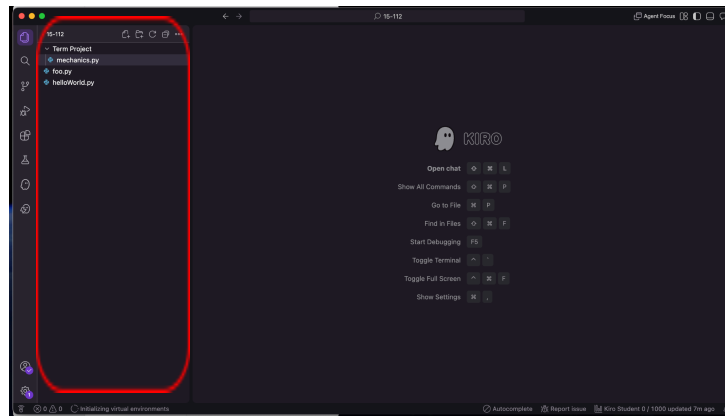
```
[
  {
    "key": "cmd+b",
    "command": "runCommands",
    "args": {
      "commands": [
        "workbench.action.terminal.kill",
        "python.execInTerminal"
      ]
    }
  },
  {
    "key": "ctrl+b",
    "command": "runCommands",
    "args": {
      "commands": [
        "workbench.action.terminal.kill",
        "python.execInTerminal"
      ]
    }
  }
]
```

Navigating Kiro Folders + Files

1. Create a new folder named “**15-112**” anywhere on your desktop. (See note if you’re having trouble with this step)
 - a. **Note: To create a folder,** open “Finder” (Mac) or “File Explorer” (Windows) and go to “Desktop”. Use cmd+shift+n (Mac) or ctrl+shift+n (Windows) to create a new folder, type “15-112”, and hit “Enter”.
2. Going back to Kiro, click “File” on the menu bar at the top of the screen.
 - a. Click “Open Folder”, navigate to your new **15-112** folder, and open it.
3. Click on the “Explorer” icon on the left hand side (the double pages icon). This will open up a window with all the folders and files in the current folder you are looking at.



4. Create a blank new file called **helloWorld.py** in your 15-112 folder.
 - a. To create a new file within your project, right click anywhere within the highlighted region below, select “New File”, type in “helloWorld.py” and hit “Enter”.
 - b. Alternatively, you can also do so by clicking on the “New file” icon in the top right of this section.



- c. **Note:** In general, end your files with “.py” so that they get read as a Python file.

5. Look at the bottom bar for something similar to the following:



Python 3.13.7 64-bit

If the text says 'Python 3.13.x' (or a similar acceptable version), you're set! If not, click on the text. After the dropdown appears, select any version starting with “Python 3.13” (i.e. 3.13.7).

Installing CMU Graphics + Running Apps in CMU Graphics

1. If you're on a Mac, first [install Homebrew](#) with the specified command.
 - a. **Note: To access your local computer terminal**, use the following shortcut: (cmd+space → search for “Terminal”)
 - b. Skip this step if you are on Windows/Linux.
2. In Kiro, create a new empty file. Copy-and-paste the following code and run it. You should see a file path printed on the bottom of your screen.

```
Python
import sys
print(sys.executable)
```

3. Run the following command in your terminal, but replace <PATH> with the exact path that was printed from Kiro.
 - a. **Note: To access your local computer terminal**, use the following shortcuts: (cmd+space (Mac) or Windows (Windows) → search for “Terminal”)
 - b. For instance, if step 2 printed the path `/usr/local/python`, then you should input the command `/usr/local/python -m pip install cmu-graphics` for step 3.

```
Python
PATH -m pip install cmu-graphics
```

4. Copy-and-paste [this Python program](#) that displays “Hello World” using `cmu_graphics` into **helloWorld.py**.
 - a. **Note:** This step can also be achieved by downloading the file and then opening it directly in Kiro.
5. Execute the program by using cmd+b (Mac) or ctrl+b (Windows). You should see a popup window with “Hello World” appear.
 - a. **Note: Do not use the triangular Run button** (since it can fail in some cases).

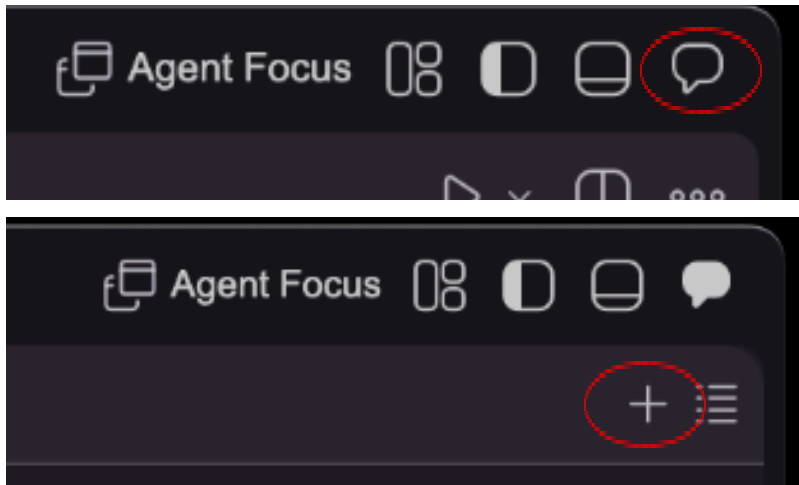
Using AI on Kiro

Now that we've successfully implemented Kiro and cmu_graphics, we'll move onto exploring how the AI models work in Kiro.

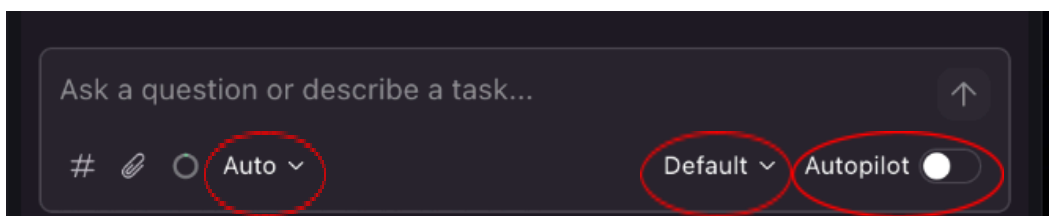
- **Note:** when using any AI model on Kiro, please ensure that you have the specific, respective project folder open (e.g. "Tetris" or "Final Term Project"), not just a single file nor a big general folder (like "Desktop" or "My Documents"). This way, the AI will only have access to the relevant files (provided context and scope), not *all* of them.
 - In most cases for this class, this'll typically be your 15-112 folder.

Accessing Kiro AI Agents

1. In the top right, click the "chat" button to toggle the AI agent display, and then press the "plus" button to start a new session.



2. Refer to the bottom right of the chat interface, and look through each of the following categories:

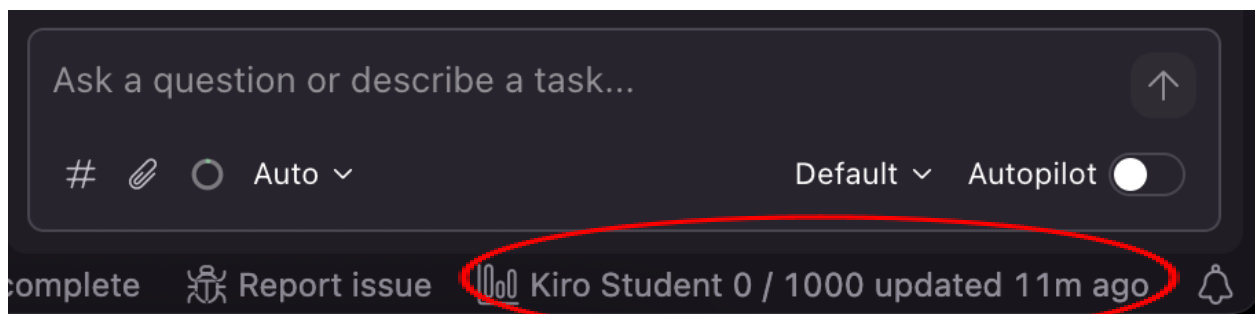


- a. **Model** (default is set to "**Auto**"): allows you to select which AI model you want to use. Generally, the higher quality the model, the more tokens it'll consume per prompt, and the longer it will take to address your prompt.

- b. **Agent** (default is set to “**Default**”): allows you to select what goal you want your model to prioritize based on your prompt. Read the descriptions to see which each model specializes in.
- c. **Autopilot Switch**: enables/disables the agent to change your code without your approval (generally a bad idea). **Set this to OFF.**

Checking Kiro Tokens

At the very bottom of your screen, towards the right hand side, there should be some bar or indicator that lets you know in real time how many credits you have used.



As a student, you have a hard limit of 1000 free credits per month. **Make sure to spend these tokens wisely.** Notably, while you can use these tokens for personal projects or other classes, **you will need a substantial amount of these tokens for 112 labs.**

Note that while each individual prompt will tell you how many tokens it consumed, the counter at the bottom might not update automatically after each prompt.

In general, we also recommend that you regularly gauge how many tokens your prompts cost, and accordingly adjust how you interact with Kiro AI models to ensure you do not hit the limit.

Enrollment Verification Error

Issue: Kiro isn't accepting your enrollment verification.

Resolution: Fill out the [SheerID support form](#) to get help with your verification.

- Under **Subject**, put "Student Account Verification"
- Under **Comments**, briefly describe the error you encountered and include the error message you received.
- **Note:** responses will likely take 1-2 business days (outside of lab), so keep an eye on your inbox (and spam folder!!). When they do reach out, they will ask for your enrollment verification. The documents from step 4 of this section will also suffice for verification here.
- This also means that you'll need to complete steps 4 and 5 of the *Approving Kiro Credits* section on your own end. For now, skip steps 4 and 5 of *Approving Kiro Credits*, and proceed with the *Installing Kiro + Configuring Settings* section of the lab.

[\(Click me to return back to instructions!\)](#)