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ITAI 3377- AI at the Edge and IIOT Environments

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Reflective Journal: Troubleshooting and Deploying an AI Model on Edge Impulse

This reflective journal captures my experience in deploying a simple AI model on a simulated edge device using VS Code and the MNIST dataset. Throughout this process, I encountered multiple technical challenges that required troubleshooting and problem-solving skills. This reflection will document these issues, the solutions applied, and key learnings from the experience.

Challenges Encountered and Solutions Applied

- **Installing TensorFlow in Python:**

Issue: When trying to install TensorFlow using `pip install tensorflow`, I encountered an error stating: *Error: Could not find a version that satisfies the requirement tensorflow (from versions: none), Error: No matching distribution found for tensorflow.*

Cause: My Python version was incompatible with TensorFlow (only versions 3.8 to 3.11 are supported).

Solution: I uninstalled Python version 3.13.2 and installed version 3.11.8

Learning Outcome: For a seamless installation and to prevent conflicts or errors, it's essential to use compatible software versions.

- **PowerShell Execution Policy Blocking npm Commands:**

Issue: When trying to run `npm -v`, PowerShell blocked the script execution with:

File C:\Program Files\nodejs\npm.ps1 cannot be loaded because running scripts is disabled on this system.

Cause: PowerShell execution policies restrict script execution.

Solution: Opened PowerShell as Administrator.

Ran the following command to allow script execution: `Set-ExecutionPolicy Unrestricted -Scope CurrentUser`

Learning Outcome: Windows security policies can prevent scripts from running, and developers may need to modify these policies to allow their tools to function correctly.

- **Installing Edge Impulse CLI Fails:**

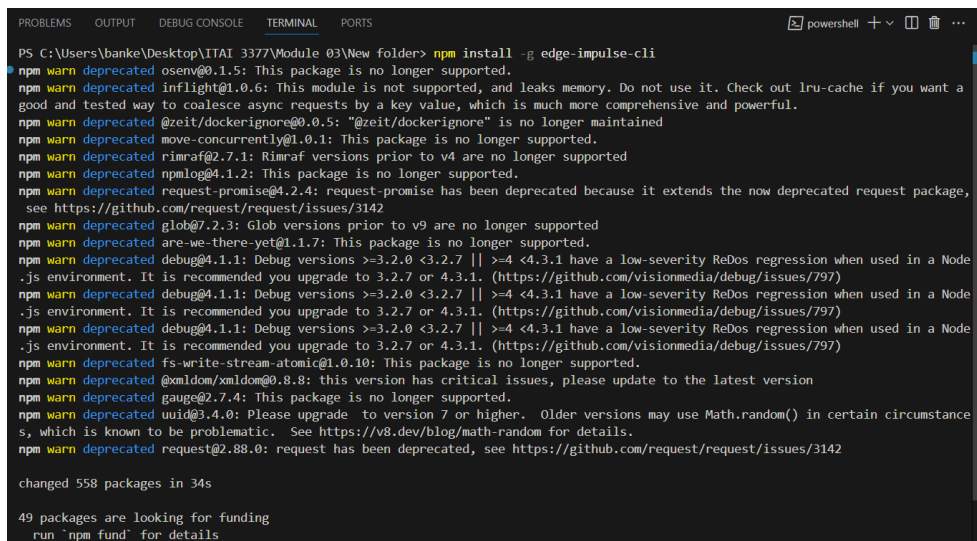
Issue: *ERROR: Could not find a version that satisfies the requirement edge-impulse-cli (from versions: none)*

Cause: edge-impulse-cli is not installed via pip; it requires Node.js and npm.

Solution: Installed Node.js from Node.js Official Website.

Installed Edge Impulse CLI using:

`npm install -g edge-impulse-cli`



```
PS C:\Users\banke\Desktop\ITAI 3377\Module 03\New folder> npm install -g edge-impulse-cli
npm warn deprecated osenv@0.1.5: This package is no longer supported.
npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a
good and tested way to coalesce async requests by a key value, which is much more comprehensive and powerful.
npm warn deprecated @zeit/dockerignore@0.0.5: "@zeit/dockerignore" is no longer maintained
npm warn deprecated move-concurrently@1.0.1: This package is no longer supported.
npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported
npm warn deprecated npmlog@4.1.2: This package is no longer supported.
npm warn deprecated request-promise@4.2.4: request-promise has been deprecated because it extends the now deprecated request package,
see https://github.com/request/request/issues/3142
npm warn deprecated glob@7.2.3: Glob versions prior to v9 are no longer supported
npm warn deprecated are-we-there-yet@1.1.7: This package is no longer supported.
npm warn deprecated debug@4.1.1: Debug versions >=3.2.0 <3.2.7 || >=4 <4.3.1 have a low-severity ReDos regression when used in a Node
.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/debug/issues/797)
npm warn deprecated debug@4.1.1: Debug versions >=3.2.0 <3.2.7 || >=4 <4.3.1 have a low-severity ReDos regression when used in a Node
.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/debug/issues/797)
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.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/debug/issues/797)
npm warn deprecated fs-write-stream-atomic@1.0.10: This package is no longer supported.
npm warn deprecated @xmldom/xmldom@0.8.8: this version has critical issues, please update to the latest version
npm warn deprecated gauge@2.7.4: This package is no longer supported.
npm warn deprecated uuid@3.4.0: Please upgrade to version 7 or higher. Older versions may use Math.random() in certain circumstance
s, which is known to be problematic. See https://v8.dev/blog/math-random for details.
npm warn deprecated request@2.88.0: request has been deprecated, see https://github.com/request/request/issues/3142

changed 558 packages in 34s

49 packages are looking for funding
  run `npm fund` for details
```

Learning Outcome: When working across different development environments, it is important to understand the nuances of various package managers, such as pip and npm.

- **Edge Impulse Rejects .tflite Model Upload:**

Issue: *Cannot handle this file, only .wav, .cbor, .json, .jpg, .jpeg, .png, .csv, .txt, .mp4, .avi supported: model.tflite*

Cause: tflite models are not supported through edge-impulse-uploader.

Solution: Uploaded the model manually via the Edge Impulse Studio website.

Learning Outcome: Some operations require manual UI interaction rather than command-line tools.

Conclusion

This experience provided valuable lessons in troubleshooting software installations, managing dependencies, and using command-line tools. Key takeaways include:

- Ensuring software version compatibility to prevent installation failures.
- Using the correct Python environment to avoid module import errors.
- Understanding PowerShell security policies for running scripts.
- Choosing the right package manager (pip vs. npm) for smooth dependency installation.
- Paying attention to command-line syntax to prevent errors.
- Performing certain tasks manually in Edge Impulse Studio when CLI commands are insufficient.