

VS Code Debugging on the Compute Node of a Remote Server

1. Install Plugin in Local VS Code.

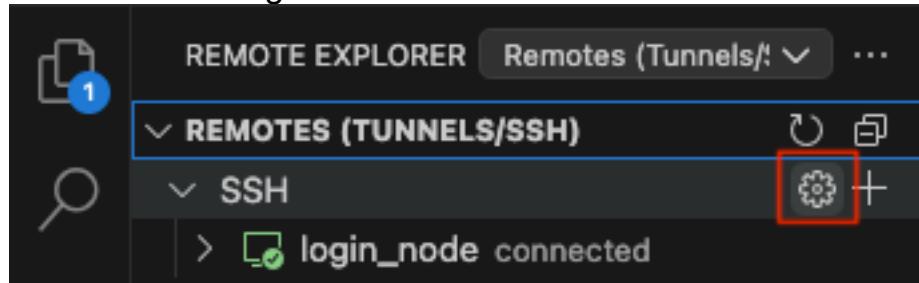
Click the Extensions panel on the left side of VS Code to install two plugins — Remote SSH and Python.



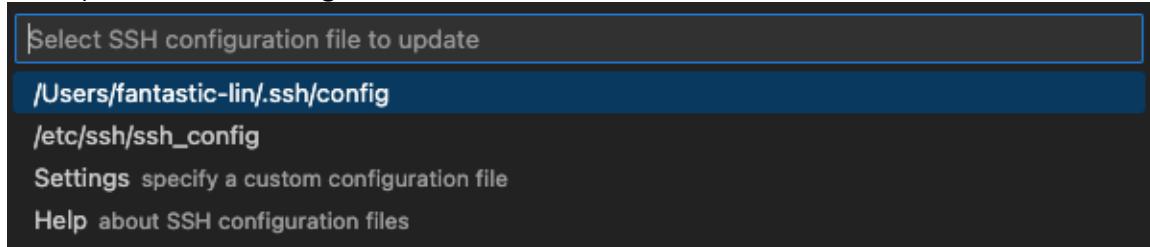
2. Set Up Remote Connection.



- 1) Click on the settings icon.



- 2) Edit .ssh/config.

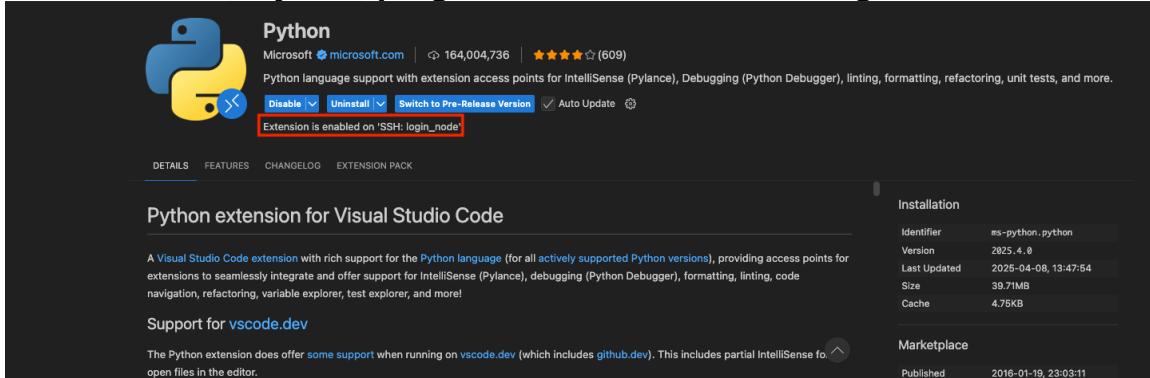


- 3) Add the following content to the ~/.ssh/config file.

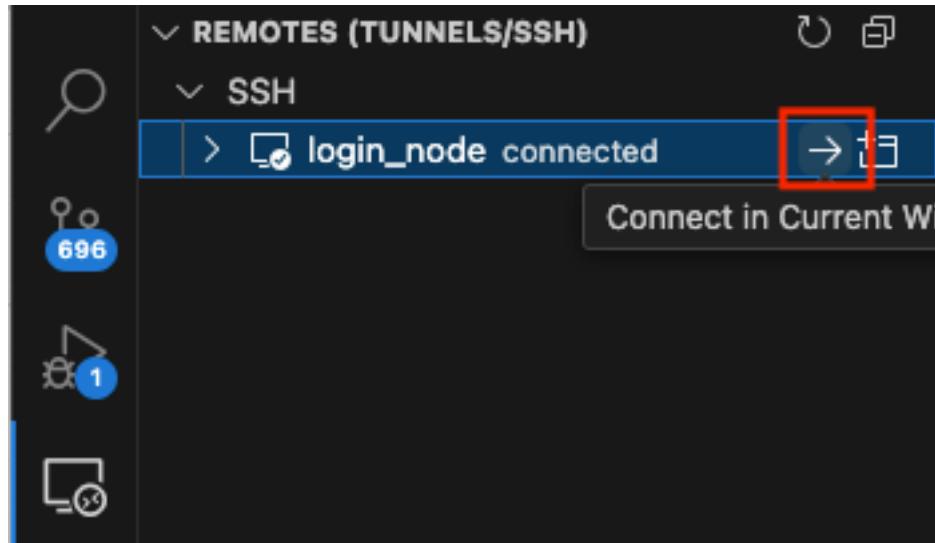
```
arterial_metrics_lin_20250325.py U • config X
Users > fantastic-lin > .ssh > config
1 Host login_node
2 HostName [REDACTED] Change to your login node IP
3 Port 22
4 User [REDACTED] Change to your remote server user name
```

- 4) Save.

3. Ensure the Python plugin is enabled on “SSH:login_node”.



4. Connect to the remote server.



5. Implement port forwarding between the local port [localhost:8899] and the remote computing node [178.187.0.3:8899]

Enter the following command in the local terminal.

ssh -L [port]:[compute node ip]:[port][remote server user name]@[login node ip]

e.g.: ssh -L 8899:178.187.0.3:8899 linlin@10.8.0.41

6. Open the remote server terminal in VS Code. Use qsub to apply for compute node resources, and then you can access the compute node.

qsub -I -q batch -l nodes=node01

explanation:

-I submit an **interactive job**

-q specify queue

-l specify the compute nodes whose IP address correspond to the

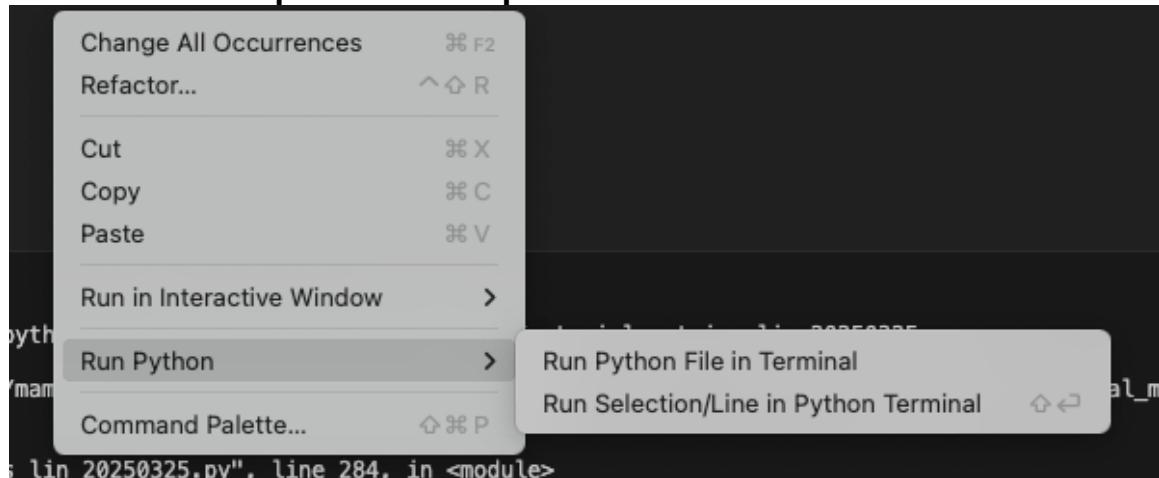
[compute node IP] used above for port forwarding

7. Pip install debugpy.

8. Add the following line at the beginning of your Python script.

```
test > arterial_metrics_lin_20250325.py
277
278     # if __name__ == "__main__":
279     #     main()
280
281     import debugpy
282     debugpy.listen(address=['0.0.0.0', 8899])
283     print("✅ Waiting for debugger to attach...")
284     debugpy.wait_for_client()
285
286
287     for i in range(3):
288         |     print(f"Count: {i}")
289
```

9. Run this script on the compute node.



10. Click the debug settings icon. This will open a file named launch.json. Edit it.

```

{
    "version": "0.2.0",
    "configurations": [
        {
            "name": "Python Debugger: Remote Attach",
            "type": "debugpy",
            "request": "attach",
            "connect": { "host": "127.0.0.1", "change" },
            "port": 8899
        }
    ],
    "pathMappings": [
        {
            "localRoot": "${workspaceFolder}",
            "remoteRoot": ...
        }
    ]
}

```

11. Then you can debug on the compute nodes like this.

```

{
    "version": "0.2.0",
    "configurations": [
        {
            "name": "Python Debugger: Remote Attach",
            "type": "debugpy",
            "request": "attach",
            "connect": { "host": "127.0.0.1", "change" },
            "port": 8899
        }
    ],
    "pathMappings": [
        {
            "localRoot": "${workspaceFolder}",
            "remoteRoot": ...
        }
    ]
}

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

exec(code, run_globals)
File "/histor/sun/linlin/vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/adapter/../debugpy/launcher/../debugpy/_main_.py", line 69, in <module>
    from debugpy.server import cli
File "/histor/sun/linlin/vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/adapter/../debugpy/launcher/../debugpy/_init_.py", line 7, in <module>
    import debugpy.vendored.force_pydevd # noqa
File "/histor/sun/linlin/vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/adapter/../debugpy/launcher/../debugpy/_vendored/force_pydevd.py", line 51
    in <module>
        pydevd
File "/histor/sun/linlin/vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/adapter/../debugpy/launcher/../debugpy/_vendored/pydevd.py", line 126, in <module>
    import _pydevd
ImportError: /lib/libmambaforge/envs/eICAB/lib/python3.7/importlib/_init_.py: Line 127, in import_module
    return _bootstrap._gcd_import(name[level], package, level)
File "/histor/sun/linlin/vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/_vendored/pydevd.py", line 226, in <module>
    from pydevd import *
File "/histor/sun/linlin/vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/_vendored/pydevd_bundle/pydevd_plugin.utils.py", line 4, in <module>
    from typing import Type, Literal
ImportError: /lib/libmambaforge/envs/eICAB/lib/python3.7/typing.py: Line 1, in <module>
    from builtins import Literal
(base) [linlin@mu02_6_eICAB] ~
(base) [linlin@mu02_6_eICAB] ~ cd /histor/sun/linlin/eICAB ; /usr/bin/env /histor/sun/linlin/mambaforge/envs/ABIDE2_analysis/bin/python /histor/sun/linlin/.vscode-server/extensions/ms-python.debugpy-2025.6.0-linux-x64/bundled/libs/debugpy/adapter/../../debugpy/launcher 5130 -- /histor/sun/linlin/6_eICAB/test/arterial_metrics_lin_20250325.py
[✓] Waiting for debugger to attach...

```

WATCH CALL STACK BREAKPOINTS

Raised Exceptions Uncaught Exceptions