

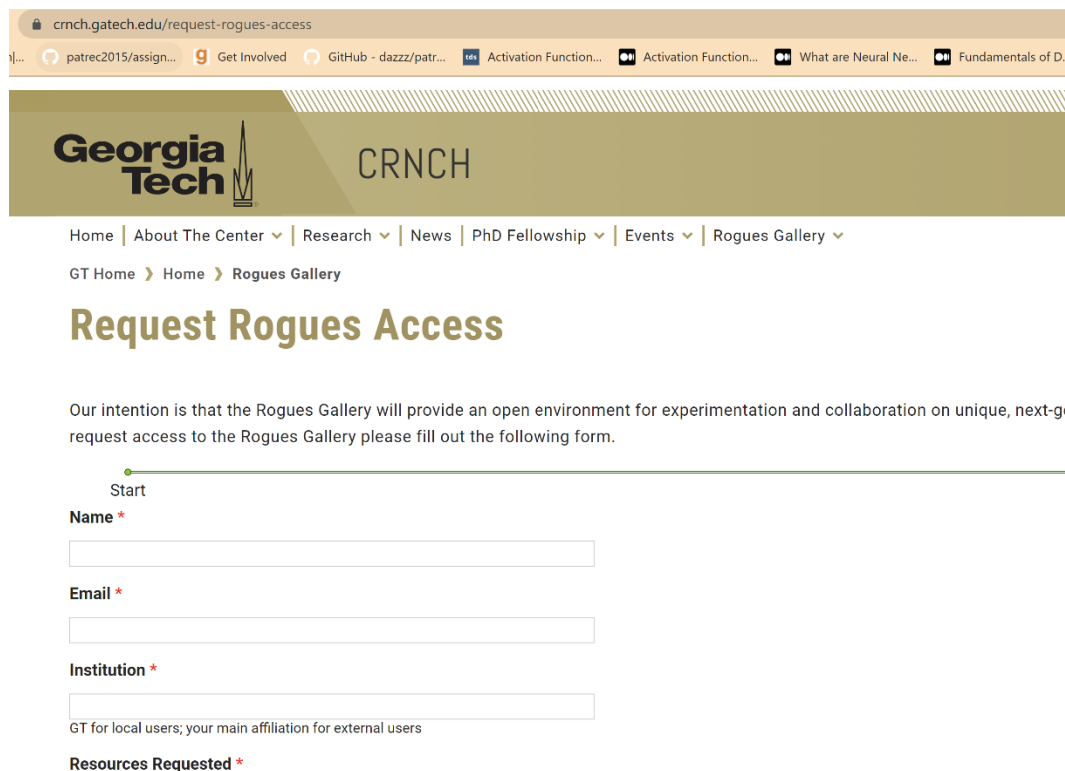
CRNCH Rogues Gallery for FPGA

Documented by: Simrat Kaur (skaur4@hawk.iit.edu) | Dated: August 1, 2022

Georgia Tech launched its own testbed platform named as CRNCH Rogues Gallery testbed, for Reconfigurable Computing, Quantum and Neuromorphic computing etc. Have a detailed reference here: <https://crnch.gatech.edu/rg>

1. Getting Started

First step is to request for access onto their testbed by filling out a simple form here: <https://crnch.gatech.edu/request-rogues-access>



The screenshot shows a web browser window with the URL crnch.gatech.edu/request-rogues-access. The browser's address bar and tabs are visible at the top. The page header features the Georgia Tech logo and the CRNCH logo. Below the header is a navigation menu with links: Home, About The Center, Research, News, PhD Fellowship, Events, and Rogues Gallery. A breadcrumb trail shows the path: GT Home > Home > Rogues Gallery. The main heading is "Request Rogues Access". Below this, a paragraph states the intention of the Rogues Gallery and asks users to fill out a form. A progress bar indicates the "Start" step is active. The form contains the following fields: "Name *" (required), "Email *" (required), "Institution *" (required), and "Resources Requested *" (required). A note below the Institution field states: "GT for local users; your main affiliation for external users".

Figure 1: GATech Access Request form

2. Access to Georgia Tech

You will receive an email for your GA Guest account created and it will contain links and username and password access to the GA Tech 'passport' login.

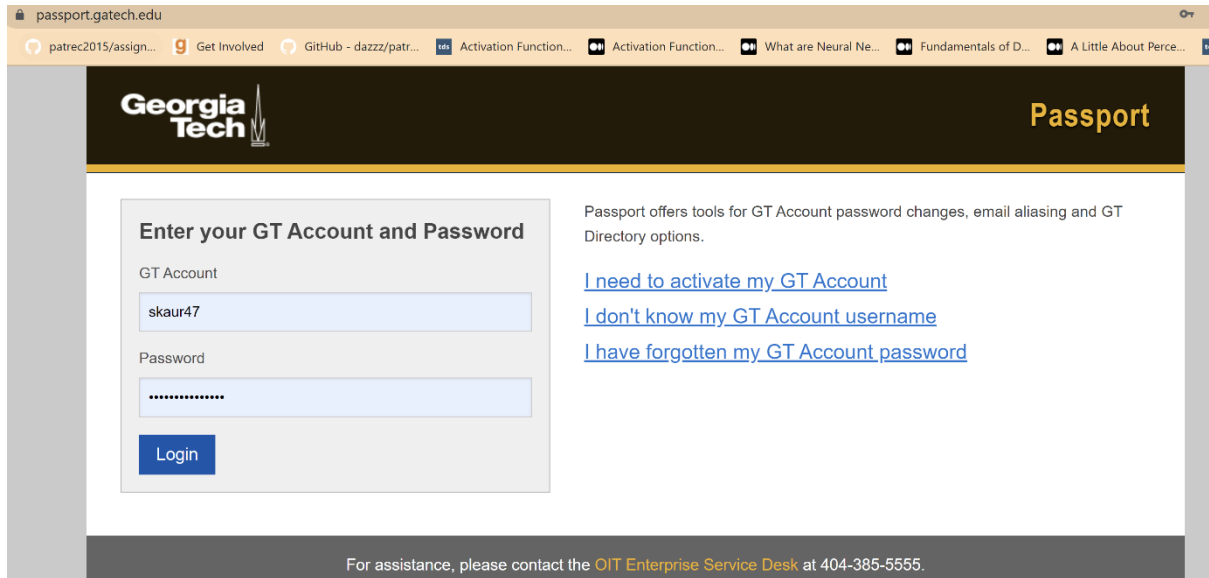


Figure 2: GATech passport login

3. GitHub Documentation

Once you login to the GA tech passport account, you can access their testbed documentation on github at <https://github.gatech.edu/crnch-rg>

4. FPGA Documentation

Look for '[Reconfig] Xilinx FPGAs Getting Started' and follow the steps mentioned to login to your VM.

5. You don't need to create extensive custom instantiations as for OCT. There are 3 different nodes for FPGAs depending upon your hardware usage. You have Pynq Z2 FPGAs, Ultrascale SoCs and 3 Alveo 280 Data centre cards.

- | | |
|----------------------------------|--|
| - rg-fpga-cubed.crnch.gatech.edu | - The Pico Computing SC6 system contains HMC memory and Xilinx Ultrascale chips. |
| - flubber1.crnch.gatech.edu | - Hosts 3x Alveo U280 boards. |
| - pynq-z2-<1-10>.cc.gatech.edu | - Pynq Z2 FPGAs |

You can use these directly into your PuTTY terminal of your local system to access the board you require.

Recurrent Error Message: GAtch testbed responds very slow and can be highly unpredictable since it is still in its early stages and lacks documentation/Support.

The connection takes time and you can see time-out messages like this one frequently.

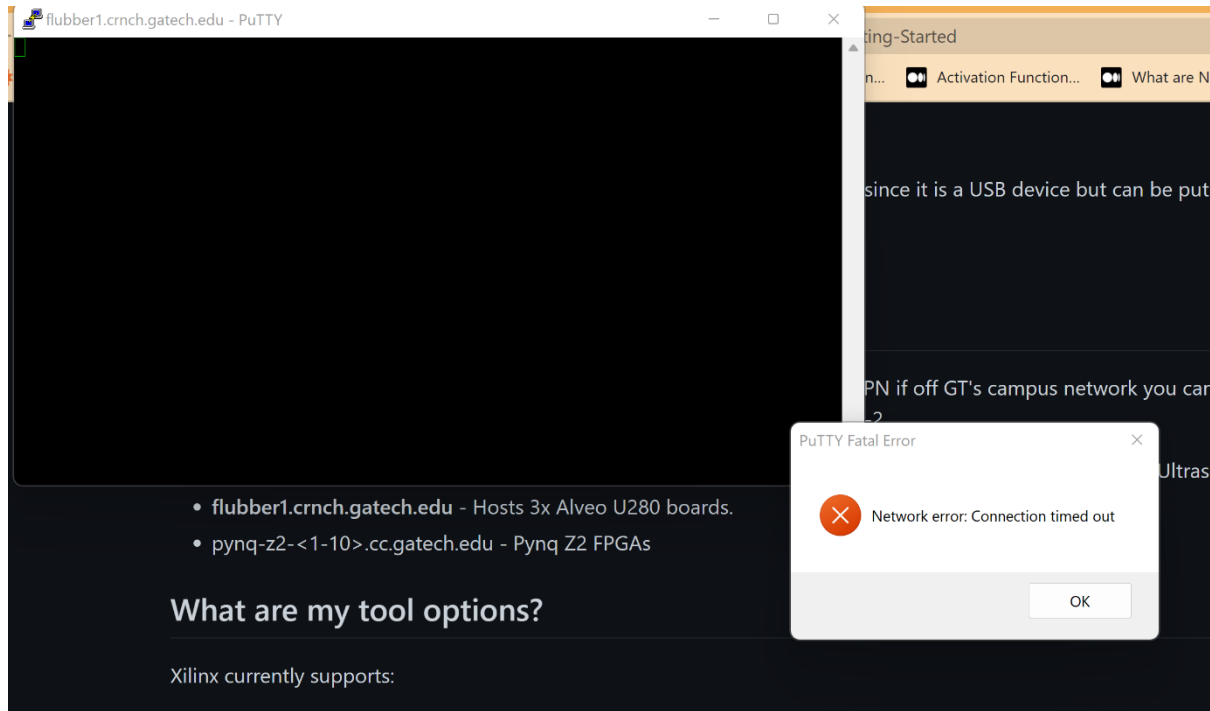


Figure 3: GAtch error

6. Another point to keep in mind is when you ssh into the VM (Let's say, you are using for Alveo card), access via flubber1.crnch.gatech.edu at port 22. Then once you get in, login with your GA Tech passport username and password and you will get access.

if you try - [username]@flubber1.crnch.gatech.edu directly on PuTTY (or any other ssh terminal) - it does not work.

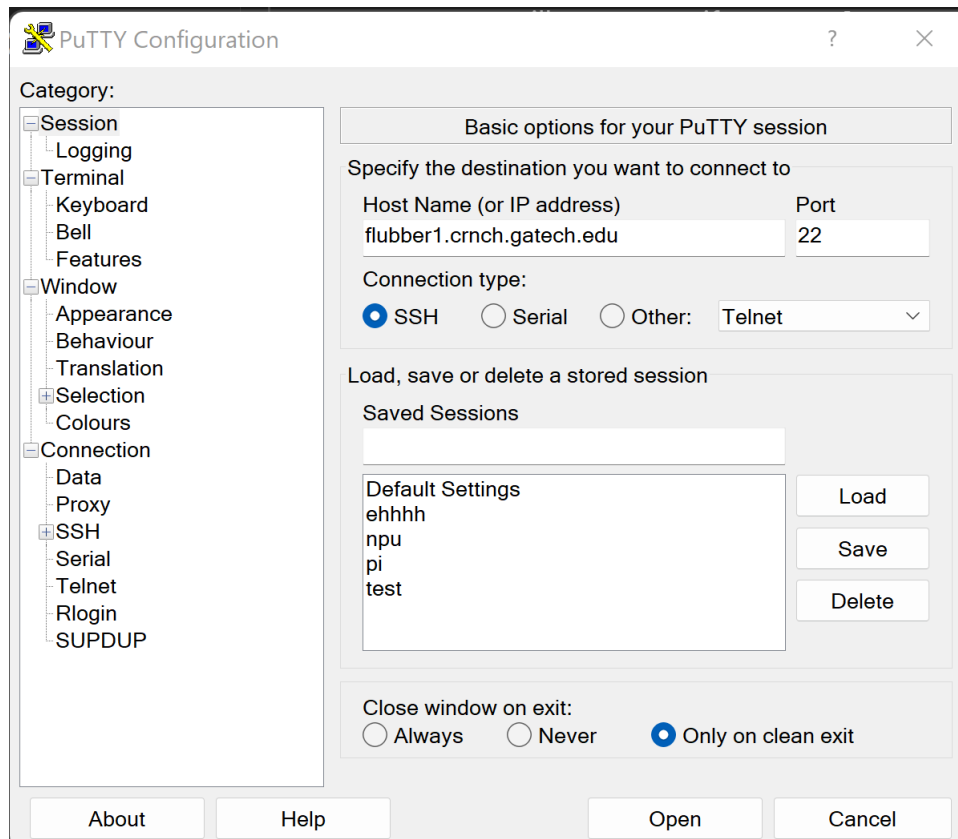


Figure 4: GATech PuTTY setup

7. The VM already contains the Xilinx EDA tools like Vitis/ HLs on it. To start vitis, check this:

```
export XILINXTOOLSHARE=/tools/reconfig/xilinx
#Source the different Vivado/Vitis settings files
. $XILINXTOOLSHARE/Vivado/2020.2/settings64.sh
. $XILINXTOOLSHARE/Vitis/2020.2/settings64.sh
. $XILINXTOOLSHARE/Vitis_HLS/2020.2/settings64.sh
```

Figure 5: GATech Vitis setup

8. To access the GUI on CRNCH Rogues, you can use X2Go.

check out their installation guide here: <https://wiki.x2go.org/doku.php/doc:installation:start>

For Ubuntu: `sudo apt-get install x2goserver x2goserver-xsession`

Use your ssh host and GA tech username and password to log in.

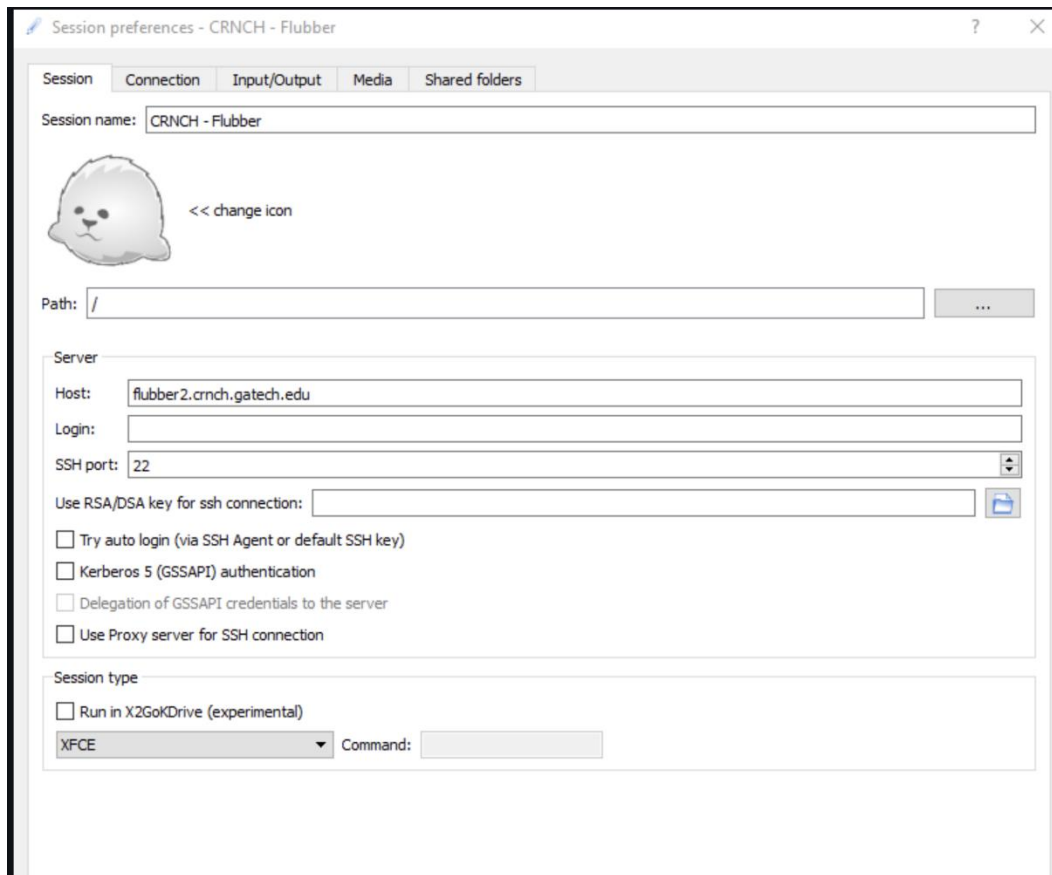


Figure 6: GATech x2Go setup

9. Unless you are a GA Tech student/staff/faculty, you will have a guest account and for that you need to add proxy settings.

- 'If you are not on campus VPN, you need to add the "proxy setting" for the X2go client to use rg-login.crnch.gatech.edu as your login or jump host proxy. Set the proxy to use the same login and password as the x2go server.'

SSH port: 22

Use RSA/DSA key for ssh connection:

☐ Try auto login (via SSH Agent or default SSH key)

☐ Kerberos 5 (GSSAPI) authentication

☐ Delegation of GSSAPI credentials to the server

☒ Use Proxy server for SSH connection

Proxy server

Type: ☒ SSH ☐ HTTP

Host: rg-login.crnch.gatech.edu

Port: 22

☒ Same login as on X2Go Server

Login:

☒ Same password as on X2Go Server

RSA/DSA key:

☐ SSH Agent or default SSH key

☐ Kerberos 5 (GSSAPI) authentication

Session type

☐ Run in X2GoKDrive (experimental)

XFCE

Command:

Figure 7: GATech proxy setup

10. Once you are done, you can see the GUI access like this:

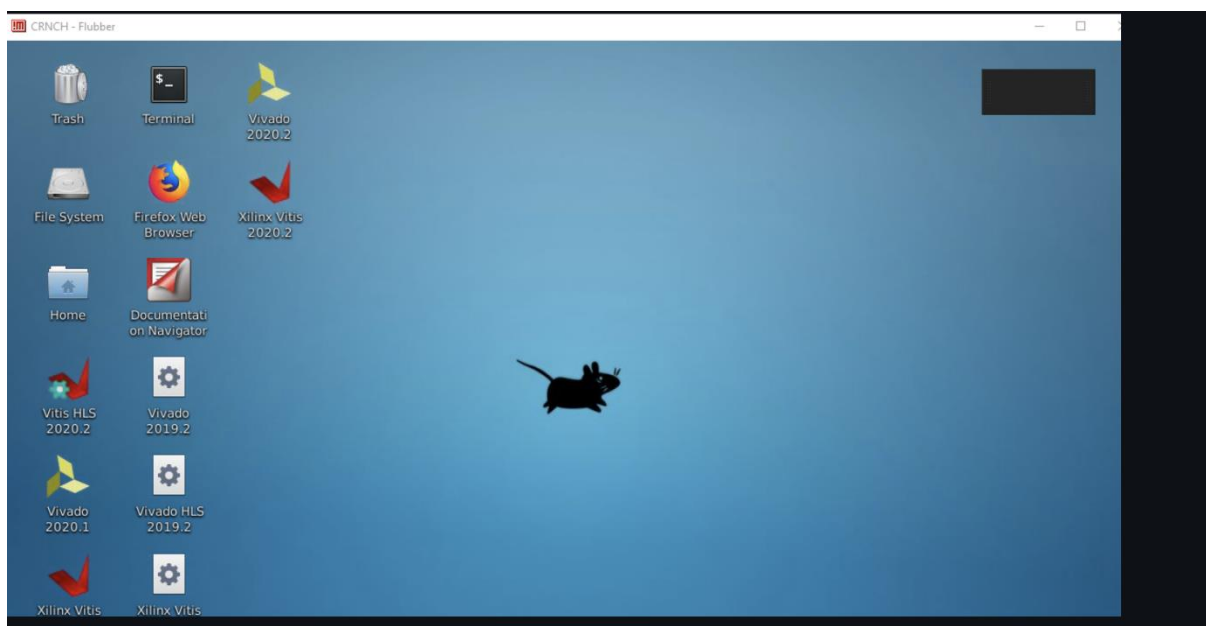


Figure 8: GATech GUI access

References

1. Your main point of contact for CRNCH goes through GA Tech support portal or helpdesk@cc.gatech.edu or you can contact Dr. Jeffery Young at jyoung9@gatech.edu
2. Once you get access, you can use the documentation at Github linked above; like mentioned above, CRNCH is a less supported and at times, unreliable.