



# LARGE-SCALE SPIKING NEURAL NETWORK SIMULATION USING NEST AND NESTML

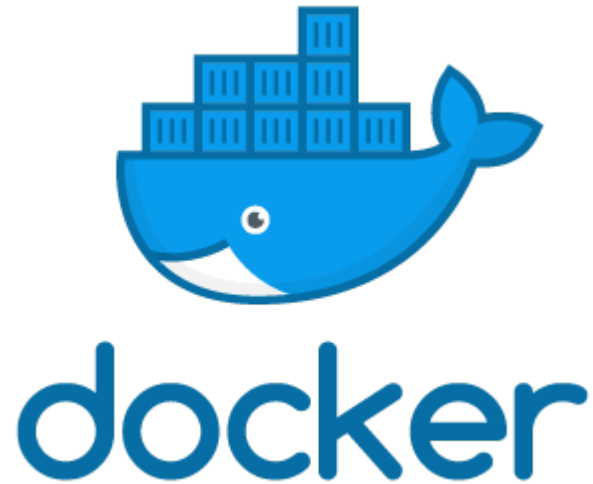
Feb 2021 | HBP Student Conference | Charl Linssen <c.linssen@fz-juelich.de>

# Welcome!

## Contents of the tutorial:

- |        |   |
|--------|---|
| T+0:00 | Introductory presentation<br>NEST Simulator   |
| T+0:15 | Hands-on<br>Logging in to the HBP cloud infrastructure  |
| T+0:20 | Hands-on<br>NEST Simulator Python notebooks (Brunel network)  |
| T+0:35 | NESTML presentation   |
| T+0:50 | Hands-on<br>NESTML Python notebooks (Ornstein-Uhlenbeck noise,<br>spike frequency adaptation, dendritic spikes) |

# Required software

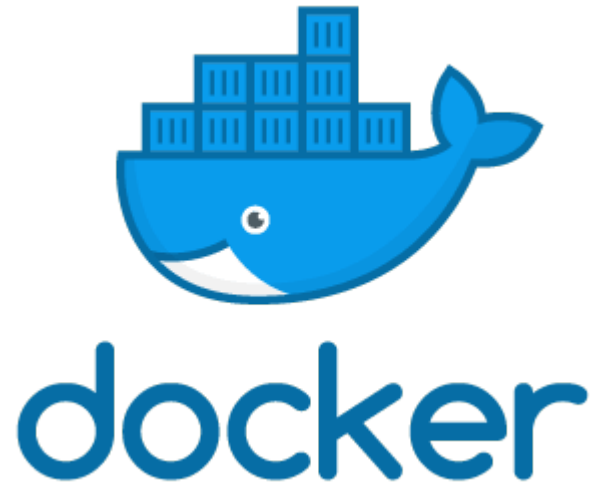


Local installation



Running on the cloud

# Required software



Local installation

Launches a Jupyter Notebook server on localhost at port 7003. The password is: **hellocns2020**

The image is available via DockerHub. To install:

```
docker pull clifzju/nest-nestml-tutorial
```

Then run the image while forwarding the port:

```
docker run -i -d -p 7003:7003 -t  
clifzju/nest-nestml-tutorial
```

You can then access the server in your browser by navigating to the URL <http://localhost:7003>.

The Docker container can be started in interactive mode (giving you a shell prompt) by omitting the `-d` parameter.

# Required software



Running on the cloud

For information on where and how to get access to HBP cloud computing resources:

<https://tinyurl.com/3zeafj6f>

After logging in to the JupyterHub environment, notebooks can be found in **materials/nest** and **materials/nestml**.

# Where to find materials?

Contents of the tutorial:

<https://github.com/clinssen/OCNS-2020-workshop>

Look in the **materials/nest** and **materials/nestml** directories to find the Python notebooks.

# Further reading

NEST Simulator:

<https://nest-simulator.readthedocs.io/>

NESTML:

<https://nestml.readthedocs.io/>

NEST Desktop:

<https://nest-desktop.readthedocs.io/>