

g2net WG3 training school on Machine Learning for Advanced Control Techniques



Report of Contributions

Contribution ID: 1

Type: **not specified**

Opening

Monday, August 30, 2021 1:00 PM (30 minutes)

Presenters: CUOCO, Elena; CHINCARINI, Andrea; PETRE, Luigia (Åbo Akademi University)

Contribution ID: 2

Type: **not specified**

Einstein Telescope site characterisation measures and their impact on the third generation GW detectors

Monday, August 30, 2021 4:00 PM (2 hours)

Presenting the telescope and problematic. The recording of Luca's lecture is here:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=3f47f75f-0b0f-4c0d-98d4-ad9e01358dc0>.

Presenter: Dr NATICCHIONI, Luca

Contribution ID: 3

Type: **not specified**

Einstein Telescope (ET): technical & scientific challenges for the future GW detectors

Tuesday, August 31, 2021 9:00 AM (2 hours)

What data analysis is done and how we could employ ML. The recording of Stefan's presentation follows below:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=e3a1cd74-0813-4d3a-b679-ada400d9d617>

Presenter: Prof. HILD, Stefan (Maastricht University)

Contribution ID: 4

Type: **not specified**

Deep learning taxonomy - part 1

Tuesday, August 31, 2021 11:30 AM (1h 30m)

The recording of Razvan's talk follows below:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=728ef593-2f33-4d12-a7ff-ada500a514ce>

Presenter: Dr PASCANU, Razvan (DeepMind)

Contribution ID: 5

Type: **not specified**

Deep learning taxonomy - part 2

Tuesday, August 31, 2021 2:00 PM (30 minutes)

Presenter: Dr PASCANU, Razvan (DeepMind)

Contribution ID: 6

Type: **not specified**

Fractal analysis for interferometer control - part 1

Tuesday, August 31, 2021 2:30 PM (1 hour)

Slides, part 1: https://drive.google.com/file/d/1M0MBBTrjLDbu_zcZBO7pliC9SuJ7AlF6/view

Slides, part 2: https://drive.google.com/file/d/1eRIKqzAM7XntED9AHv8HnHx_UO8jQF2C/view

The recording of Marco's lecture follows below:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=38208e71-6784-4ed3-86ef-ada500a563c8>

Presenter: Prof. CAVAGLIA, Marco (Missouri University of Science and Technology)

Contribution ID: 7

Type: **not specified**

Fractal analysis for interferometer control - part 2

Tuesday, August 31, 2021 4:00 PM (1 hour)

Instructions for hands-on activity here:

https://docs.google.com/document/d/1uFzv2BqqKEY5d0gayKHy30qjGxyDTM5RXEjeAjb_rW8/edit

Presenter: Prof. CAVAGLIA, Marco (Missouri University of Science and Technology)

Contribution ID: 8

Type: **not specified**

LISA talk on disentanglement of GW

Wednesday, September 1, 2021 9:00 AM (2 hours)

We will detect tens/hundreds GWs per day and need to determine if more than one GW occurs at the same time; opportunity for multi messenger cooperation.

Here are links to the two google colab notebooks that Natalia created for practicing the concepts from her lecture:

https://colab.research.google.com/drive/1zoUz5fDEJ3vS1l_i6bbDfgEFJLuAVdm8?usp=sharing

<https://colab.research.google.com/drive/1hRjtDyEYTbxTD6KbJAs70MYePUIwf2ID?usp=sharing>

The recording of Natalia's presentation follows below:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=89d73d9d-3d7e-4381-81d0-ada400d9d638>

Presenter: Dr KORSKOVA, Natalia (SYRTE/Paris Observatory)

Contribution ID: 9

Type: **not specified**

Possible Utilization of Intelligent Robotics Technologies in GW detection and in the Einstein Telescope - part 1

Wednesday, September 1, 2021 11:30 AM (1h 30m)

Fabio's slides can be found here:

<https://drive.google.com/file/d/12A1zEvgTWdOsjn7jv8DTU7kP-NOSFaxk/view>

The recording of Fabio's presentation follow bellow:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=de028f6b-433d-40a2-94d3-ada600904f23>

Presenter: BONSIGNORIO, Fabio

Contribution ID: 10

Type: **not specified**

Possible Utilization of Intelligent Robotics Technologies in GW detection and in the Einstein Telescope - part 2

Wednesday, September 1, 2021 2:00 PM (30 minutes)

For the participants

- 1) (needed) Sign up on this website:<https://robotbenchmark.net>
- 2) (nice to have) You can download webots from here: <https://cyberbotics.com/doc/guide/installing-webots> and install python3 if they didn't already
- 3) (nice to have) I will walk the participants through a real world research ROS-Gazebo installation from scratch; you can do the same on your computer; you will need an Ubuntu 18.04 LTS OS either on their computer or in a virtual machine (not recommended). Virtual machine software can be downloaded from here <https://www.virtualbox.org/wiki/Downloads>. Ubuntu 18.04 LTS can be downloaded from here: <https://ubuntu.com/download/alternative-downloads>

Presenter: BONSIGNORIO, Fabio

Contribution ID: 11

Type: **not specified**

Roundtable discussion: ML for advanced control

Thursday, September 2, 2021 9:00 AM (3 hours)

Presenters: BONSIGNORIO, Fabio (HeronRobotics); BADARACCO, Francesca (UCLouvain); NAT-ICCHIONI, Luca (INFN); Prof. CAVAGLIA, Marco (Missouri University of Science and Technology); Dr KORSAKOVA, Natalia (SYRTE/Paris Observatory); Dr PASCANU, Razvan (DeepMind); Prof. HILD, Stefan

Contribution ID: 13

Type: **not specified**

Newtonian Noise Cancellation Strategies and Optimisation Problems

Monday, August 30, 2021 1:30 PM (2 hours)

The recording of Francesca's presentation can be found here:

<https://panopto.abo.fi/Panopto/Pages/Viewer.aspx?id=576e740e-a090-4648-bf95-ada400b4ca68>.

Presenter: Dr BADARACCO, Francesca (UCLouvain)