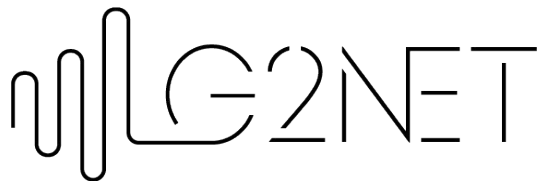


WG1

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Annalisa Appice

09.06.2022



COST ACTION CA17137
A NETWORK FOR GRAVITATIONAL
WAVES, GEOPHYSICS AND
MACHINE LEARNING

WG1: Machine Learning for Gravitational Wave astronomy

Group leaders: Michał Bejger (CAMK Warsaw) and Annalisa Appice (Uni Bari)

Dedicated e-mail list: mail.ego-gw.it/mailman/listinfo/wg1-g2net

50+ members with diverse skills:

- Classical machine learning
- Data-driven analysis
- Pattern recognition
- Digital signal processing
- Time series analysis
- Image analysis
- Software engineering
- Online learning
- Big data analytics
- Deep learning
- HPC/GPU computing
- Gravitational-wave astrophysics
- Numerical methods

4 broadly-defined tasks:

1. Access to the detectors data, and exploration of alternative representation of GW data
2. Detection and classification/characterization of the GW data
3. Denoising techniques for signal extraction
4. Parameter estimation for GW signals and instrumental glitches

Scientific input/output

- Regular (monthly) telecons (first Monday of the month at 15 CET/CEST)
 - usually one progress report presentation & free discussion
 - agendas & minutes: [05.22](#), [03.22](#), [02.22](#), [01.22](#), [12.21](#), [11.21](#), [09.21](#), [06.21](#), [05.21](#), [04.21](#), [03.21](#), [02.21](#), [01.21](#), [12.20](#), [11.20](#), [10.20](#), [07.20](#), [06.20](#), [05.20](#), [04.20](#), [03.20](#), [02.20](#), [01.20](#), [05.19](#), [04.19](#), [01.19](#)
- Overlap in goals and skills of other WGs → potential synergies
 - [Kaggle competition](#), [MLGWSC-1](#) (binary systems' inspirals, “CBC” sources)
 - Potentially a second Kaggle competition WG1-oriented in the works (“Continuous Waves”?)
- so far: [60+ publication \(according to NASA/ADS\)](#)
- **Final goal:** “production” solutions from G2NET community applied in GW astrophysics

Problems!

- Low participation on regular teleconfs (~10 participants)
- Low activity in discussions outside the group meetings (in e-mails/slack),
- Not enough brainstorming (in my opinion)
- Low (=undetectable) activity of most of the task leaders (exception is task 1)
 - General feeling: people don't want to be responsible/ in charge, while retaining benefits of being inside the action

Solutions?

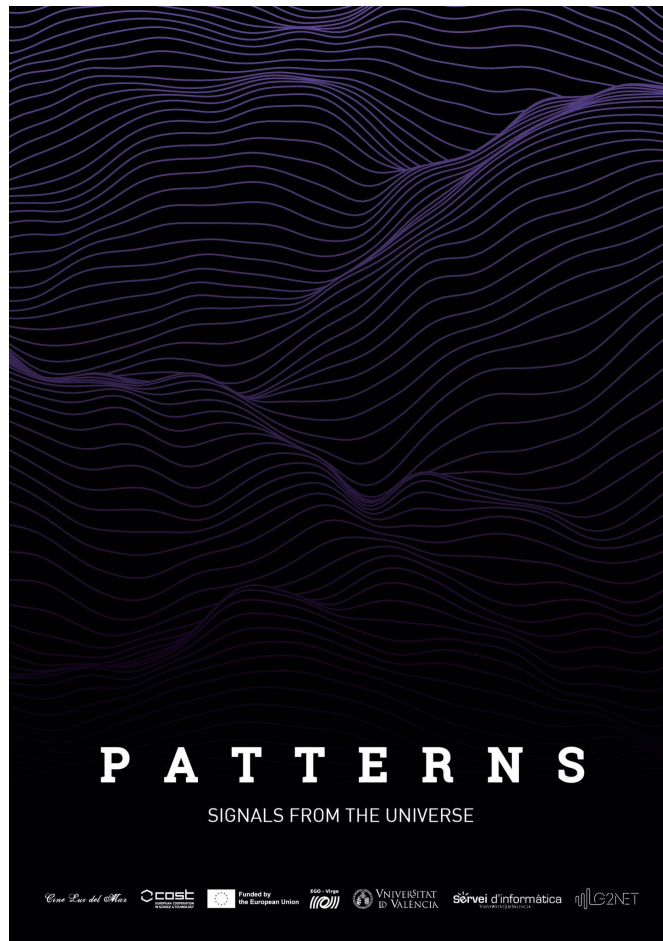
- Special benefits (better recognition?) for task leaders?
- More in-person interactions?
 - so far no real plans for the in-person meeting due to unpredictable nature of the pandemic
 - Next best thing: hackathon sessions? (works only if people have enough free time resources to spend)

WG1 Valencia meeting agenda

- <https://indico.ego-gw.it/event/370/>
- 2.5 days of progress report sessions,
- Discussion sessions: Monday - WG1 in the G2Net paper, other days devoted to WG1 projects, collaboration & networking

G2Net movie:

- Tuesday April 12, 17:00, sala Darwin, mainly addressed to students of the campus
- Wednesday April 13, 16:00, Marie Curie Auditorium (in English), mainly addressed to researchers.
- Discussion and round table after the screening



WG1 input in the G2Net-all paper

In the coming months we should finish the G2Net paper (to have it in a good shape before September).

After group discussion in Valencia:

Step 1. We focus now on the first part of the G2Net paper, i.e. a simple review of what we did.

This is a necessary condition for the second, more ambitious Step 2:

Step 2. summary analysis & outlook, lessons learned etc.

If we fail Step 2. then at least we will have Step 1., but without Step 1 Step 2 is impossible.

Step 1. is relatively easy to do, but of course we need a small set of coordinators and writers. To be discussed further with the whole G2Net.