FUTURE OF COMPUTING FOR FUTUREEO

Gabriele Meoni and Nicolas Longepe

ESA ESRIN

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Future of Computing for FutureEO

Room: Agora SAPIENS | Tuesday 24/05/2022, 12.40pm – 1.25pm | Duration: 45 Minutes

Topic: Deep Dive | Form of presentation: Agora Oral

This DeepDive session will explore new transformative computing technologies which have the potential of revolutionising information processing and becoming a key enabler for computationally hard engineering and scientific problems. Recent advances in quantum technologies and quantum algorithms is an example of such breakthrough, along with hybrid computing and distributed computing. Discover what are the opportunities and the emerging and ongoing areas of research in future of computing for EO.

Speakers:

-Shay Strong (Iceye, FI / LU)
-Martin Palkovic (ECMWF, UK)
-Lisa Wörner (DLR, DE)

Future of Computing for FutureEO: Speakers

Shay Strong got her Ph.D in Astronomy from UT Austin. After, she worked at Johns Hopkins University APL on spacecraft development. She joined the DC satellite startup OmniEarth in 2014. Upon the company's acquisition, she joined EagleView as Director of ML/AI. Today, she is the VP of Analytics for Finnish satellite company ICEYE.

Remote sensing & imagery (satellite & aerial) expert. Machine learning & neural net (mxnet, torch, caffe, tensorflow) applications to geospatial big data, open source algorithm development, AWS cloud ML pipelines, remote sensing, planetary atmospheric modeling, infrared sensor performance, data analysis/visualization, iOS app development, python open source algorithm development.

Shay Strong (Iceye, FI / LU)

Future of Computing for FutureEO: Speakers

Martin Palkovic (ECMWF, UK)

Martin Palkovic received his M.Sc. degree in Electrical Engineering (with highest distinction) from the Slovak University of Technology, Bratislava, Slovakia, in 2001, and his M.Sc. degree in Economics from the University of Economics, Bratislava, Slovakia, in 2000. He joined imec Leuven, Belgium in 2001, where he has been a researcher in the Design Technology department from 2001 to 2008 and senior researcher in the Circuits and Systems for ICT department since 2009. From 2002 to 2007 he was also working towards the Ph.D. degree in the department of Electrical Engineering at the Technische Universiteit Eindhoven, The Netherlands. From 2012 to 2017 he was the director of newly established IT4Innovations, the national supercomputing center in Czech Republic. Since October 2018 he is the Director of Computing at European Centre for Medium-Range Weather Forecasts (ECMWF) in Reading, United Kingdom.

His research interests include high-level optimizations, parallel platform architectures for low power, and synergies between the embedded systems and HPC systems. He is author and co-author of more than 50 publications in the embedded system domain. He was the general chair of HiPEAC 2016 in Prague and member of the Horizon 2020 Future and Emerging Technologies Advisory Group. He is member of ESFRI Strategy Working Group on Data, Computing and Digital Research Infrastructures.

Future of Computing for FutureEO: Speakers

Lisa Wörner (DLR, DE)

Lisa Wörner is currently Group Leader in Quantum Engineering at the German Aerospace Center (DLR) Institute for Quantum Technologies and University of Ulm.

Before joining DLR, Lisa Wörner conducted postdoctoral research at the Max Planck Institute for Extraterrestrial Physics (MPE) with Prof. G.E. Morfill, the Quantum Nanophysics Group (QNP) of the University of Vienna with Prof. M. Arndt, and, the Center of Applied Space Technology and Microgravity (ZARM) of the University of Bremen with Prof. C. Braxmaier.

She is a researcher with interests in different quantum mechanical areas, and in particular BECCAL (Bose Einstein Condensate and Cold Atom Laboratory), a joint mission between NASA and DLR to investigate atom optics under microgravity. In this capacity she is striving to advance fundamental quantum physics research in space as well as developing new technologies. This includes the preparation of experiments for extreme environments, tackling open challenges, finding novel solutions, and the ruggedization and miniaturization of setups.

In addition to the research on cold and condensed atoms, she is involved in development of 'Green Quantum' - Climate Change Observation with Quantum Technologies.

Future of Computing for FutureEO: Seed Questions

- What is the current **status**?
- Why is Computing for EO so **important** right now?

- What are the **challenges** of computing for FutureEO?

- How has computing for EO **changed in the past** 5 years?
- What are the current **trends** of computing for Earth Observation? (For which applications?)
- What do you predict will happen in the **next** 5 to 10 years?

- Which **applications** might benefit the most from the emerging compute means?
- Who is making the **greatest advancements** in computing for EO, and what are they doing?

- What is one piece of **practical advice** you would give to someone wanting to contribute to the progress of computing for EO?