DRIVEN

Newsletter No 2

February 2021

Dear Readers,

The DRIVEN Team is back with fresh news about its latest project activities and achievements! Although we did not release a newsletter in 2020, we continue boosting the scientific excellence and technology-transfer capacity in data-driven simulation with our partners. Also, we have been actively fighting against the COVID-19 pandemic using our knowledge and scientific expertise in data science.

This newsletter will feature news relevant to :

- The DRIVEN workshops and the new seminar series.
- Data science to fight against COVID-19 pandemic.
- The international conference 2021.
- The winter school 2021.
- And much more.

For more information, please visit our DRIVEN website.

DRIVEN Team

The DRIVEN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 81199.

The DRIVEN workshops and the new seminar series

The DRIVEN partners organised two scientific workshops back in February and September 2019 respectively. The presentations from the 2nd DRIVEN workshop are available for the public on this webpage.

Then, the project suffered from the COVID-19 pandemic, and all our planned events including the workshops had to be cancelled. Nevertheless, our partners and coordinator created a seminar programme to continue the exchange of knowledge and training of their staff. The seminar series consisted of more than 20 talks from April 2020 until now and including the following:

- *April 24th 2020: Aflah Elouneg (Institut FEMTO-ST); Identification of keloid and surrounding healthy skin material parameters using Digital Image Correlation measurements in vivo.*
- *May 8th 2020: Saurabh Deshpande (uni.lu); Estimation of Time Dependent System using Kalman Filtering.*
- *June 26th 2020: Vasilis Krokos (uni.lu); Probabilistic stress prediction in heterogeneous media using convolutional neural networks.*
- *July 3rd 2020: Chintan Jansari (uni.lu); Isogeometric boundary element method for linear elastic fracture mechanics using trimmed NURBS.*
- *October 28th 2020: Cosmin Anitescu (*Weimar University); *Methods Based on Artificial Neural Networks for the Solution of Partial Differential Equations.*

In addition, two webinars on the new FEniCS project, a finite element solver, were given to Michael Sacks' group at UT Austin on the 24th of September and the 29th of October 2020. The speaker, Dr. Jack Hale (UL), is co-leading the FEniCS project and provided in-depth information on this initiative.

Data science to fight against COVID-19 pandemic.

During this turbulent period, the DRIVEN coordinator applied to the national programme FNR COVID-19 Taskforce, a unique initiative aiming to find fast and efficient solutions to the epidemic.

Prof. Stéphane Bordas submitted innovative project ideas to the Fond National de la Recherche (FNR) where the benefits of advanced computational sciences are contributing to the fight against COVID-19. Amongst the proposals submitted to the FNR-Covid-19 call, we can mentioned the following ones:

Easy ambulatory diagnostic profilometry for Covid19 symptoms tracking: computed in Luxembourg

In order to easily track symptoms and severity of COVID-19 diagnosed or suspected subjects, the project proposes a simple ambulatory diagnostic system for creating a functional capacity profilometry of an individual with modular approaches.

TraAct-DD – Track and Act with Data Donation #getout #stayout

The project aims to develop epidemiological models based on national data available to secure the gradual release of the population which may stem the pandemic and enable return to normal (#getout, #stayout).

Organisation of the international conference 2021.

The DRIVEN conference was originally planned as a satellite event of the world renowned WCCM-ECCOMAS Congress held in Paris (France) on the 19-24 July 2020. Unfortunately,

the conference was postponed until January 11-15, 2021 with a new format, totally virtual.

DRIVEN project organised a special symposium within the ECCOMAS Congress, namely: ***MS407 - Patient specific biomechanics modeling and simulation Organised by: R. Baier, O. Barrera, S. Bordas, S. Cotin, K. Erleben, J. Llorca, J. Rodrigues*, M. Sacks.***

In addition, the DRIVEN partners took part to twelve pre-recorded presentations in other thematic symposiums such as the following:

- *5936 - Adaptive Pht-Splines with Global Plane-Wave Enrichment for Time-Harmonic Acoustics C. Jansari*, J. Videla, S. Natarajan, S. Bordas, E. Atroshchenko*
- *4496 - Unsupervised Learning Based Model Order Reduction For Hyperelastoplasticity S. Vijayaraghavan*, L. Beex, L. Noels, S. Bordas*
- *3462 - Practical Aspects of the Bank-Weiser Estimator Implementation and Biomechanics Applications R. Bulle*, S. Bordas, F. Chouly, A. Lozinski, J. Hale*
- *3650 - Hyper-Reduction Method In Non-Linear Computational Mechanics D. Baroli*, S. Bordas, R. Dhopeshwar, K. Veroy-grepl, K. Veroy-grepl*
- *5552 - High Fidelity Simulation of Heart Valve Interstitial Cell Contractile Behavior in 3d Gels X. Feng, A. Khang*, J. Sansom, N. West, E. Lejenue, M. Sacks*

Organisation of the Winter School 2021

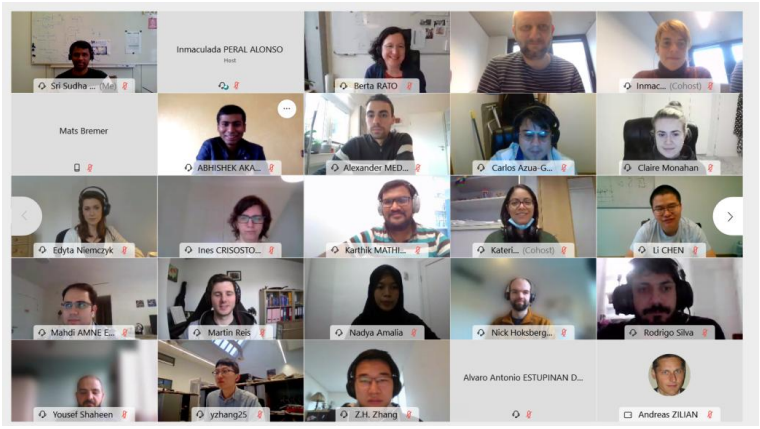
The DRIVEN project organised its 2nd Winter School the week of 26-29 January 2021. The event focused on topics relevant to manufacturing, mechanics and characterisation of advanced engineering materials.

The winter school co-organised by the University of Luxembourg and the Bernal Institute at Limerick University proposed a 4-day programme fully virtual to ensure safe participation for the attendees. The event consisted of scientific presentations and training led by senior researchers at UL and ULIM as well as a special Ph.D. Pitches session. For the occasion, the organisation committee created the “Award for the Perfect Pitch” with three (3) prizes.

The training programme dedicated to PhD students and young scientists attracted a total of 63 participants. We also noticed the participation of experienced researchers as well as representatives from the industry, such as: Johnson and Johnson, AM 4 AM Sàrl and SISTO Armaturen S.A.

UNIVERSITY OF LIMERICK OLLSCOIL LUIMNIGH | Bernal Institute

uni.lu | UNIVERSITÉ DU LUXEMBOURG



Latest news

- The Staff Exchanges between UL and its twinning partners ULIM, Inria, and UT Austin are also going to more virtual form due to the COVID-19 pandemic. The main focus of this activity does not lie in the actual travels but the exchange of expertise and training of staff. As a result, DRIVEN project will transform this activity to a which will be sustained through the Virtual Exchanges of Knowledge.
- The DRIVEN team negotiated a project extension of 12 months with the European Commission. We are happy to announce that the DRIVEN project will now end in March2022.

Learn more on our DRIVEN project activities and achievements by visiting frequently our website:

2020driven.uni.lu

The DRIVEN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 81199.