Dear Readers,

We are happy to announce the release of our third SanDAL newsletter featuring our latest news regarding the implementation of the research group in Mathematical Statistics and Data Science (MS&DS) at the University of Luxembourg.

Similarly to other H2020 projects, SanDAL was directly impacted by the COVID-19 crisis but you will see in this newsletter that the research group on MS&DS developed counter-measures to achieve the project objectives in this difficult context.

In this newsletter you will learn about the advancement of project activities and other initiatives taken by our motivated and dedicated SanDAL team :

- ❖ Meet our new SanDAL team members
- ❖ Organisation of the workshop on Data science
- ❖ Invitation of SanDAL experts to the Séminaire Parisien de Statistique
- ❖ Organisation of the 1st SanDAL Winter School
- ❖ Launch of the new Master of Data Science at the University of Luxembourg
- ❖ Final countdown for our ICON STARF conference

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Prof. Dr. Yannick Baraud

ERA-Chair Holder
&
SanDAL Coordinator

SanDAL

Meet our new Team Members

In 2021, the SanDAL project welcomed two new members to reinforce their team at the Mathematical Statistics and Data Science (MS&DS) research group. We are proud to present you our two newly recruited staff:

Dr. Hélène Halconruy has been recruited as a Post-doctoral researcher at the University of Luxembourg. She defended her thesis in 2020 under the supervision of Laurent Decreusefond (Télécom Paris). Her research interests cover topics relevant to: Malliavin calculus, Stein method, Discrete financial mathematics, Non-parametric estimation and model selection.

Dr. Katerine SALEME RUIZ has graduated from the Mississippi State University in 2016 and did a postdoctoral fellowship at George Mason University. Her research interests focus on the numerical solution of problems with scientific and industrial applications in the fields of computational mechanics and material science. Her research expertise and managerial experience will be a real asset for the SanDAL project.
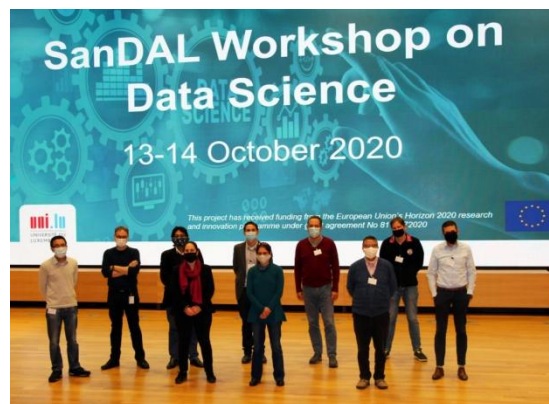
Workshop on Data Science

The SanDAL team organised an interdisciplinary workshop on the 13-14 October 2020 to share knowledge and exchange experience on data science carried out in different department of the University of Luxembourg (e.g. life sciences, physics, economics, computer science and mathematics).

A number of well-known experts at the University of Luxemnbourg presented their research activities and how data science contributes to their research work. Also, we were pleased to have an introduction speech from Prof. Jean-Marc Schlenker, Dean of the Faculty of Science, Technology and Medicine (FSTM) who underlined the importance to position the University of Luxembourg as a leader in data science.

During the two-day workshop we had nine (9) experts presenting their work and more than 60 participants joined the event. The programme and the list of speakers are available on the website.

SanDAL Winter School

On the 7-11 December 2020, more than 60 doctoral candidates from universities around the world attended the online winter school on mathematical statistics organised by the University of Luxembourg.

Winter School 7-11 December 2020

During the week, three internationally renowned professors shared their knowledge and experience with young researchers. Cristina Butucea, Professor of Statistics at CREST, ENSAE, IP PARIS focused on non-parametric inference under local differential privacy; Karim Loucini, Professor at CMAP-Ecole Polytechnique presented some recent results and applications of principal component analysis and Stéphane Robin, Senior Researcher at AgroParisTech/INRA showed statistical inference of incomplete data models to analyse ecological networks.

In addition, nine doctoral candidates had the opportunity to give talks about their current research activities and exchange about future developments.

Non-parametric Inference under Local Differential Privacy
Cristina Butucea, ENSAE, Université ParisTech

Principal Component Analysis: some recent results and applications
Karim Lounici, CMAP-Ecole Polytechnique

Statistical inference of incomplete data models to analyse ecological networks
Stéphane Robin, AgroParisTech/INRA/univ. Paris Saclay & Muséum National d'Histoire Naturelle

The winter school concluded with a presentation of the European funding opportunities for mathematicians, especially in the framework of the new Horizon Europe and the invitation to participate in the International Conference on Statistics and Related Fields (ICON STARF) which will take place from 12 to 16 July 2021.

Séminaire Parisien de Statistique

On the 12th of April 2021, two members of the SanDAL team were invited to give a talk to the "Séminaire Parisien de Statistique", a seminar that brings together all mathematicians who work in Paris and its suburbs. The SanDAL team is proudly contributing to the recognition of the University of Luxembourg by its French peers in the field of mathematics and statistics. The SanDAL speakers did a 75-minutes presentation each, on the following topics:

Séminaire Parisien de Statistique

- ❖ *Yannick Baraud*: How to build a robust estimator for a given loss?

- ❖ *Guillaume Maillard*: First order asymptotics of (aggregated) hold-out in least-squares density estimation

SanDAL

Master of Data Science

The SanDAL project supported the creation of a new Master of Data Science at the University of Luxembourg starting in September 2021. Based on a multidisciplinary approach, the Master's programme will train students in data analysis, modelling and management, and prepare them to work in areas as artificial intelligence, cloud computing, machine and statistical learning or big data.

❖ **High-level training**: courses are conducted by high-level research teams from Luxembourg and abroad

❖ **Multidisciplinary approach**: joint contribution of the university's main research centres, including the departments of Mathematics, Computer Science, Physics and Materials Science, Life Sciences and Medicine as well as LCSB and SnT

PRESENTATION

- **Degree**: Master of Data Science
- **Duration**: 2 year full-time programme / 4 semesters (120 ECTS)
- **Language**: English

❖ **Broad spectrum of skills**: the programme covers data mining, data cleaning and processing, data visualization, statistical modeling, database management, workflow organization. It also addresses machine learning and deep learning techniques and their applications to life sciences, medicine and physics

❖ **Variety of pedagogical tools**: mix of theoretical and practical courses, projects and workshops involving professionals from the industrial sector

❖ International and multicultural environment: the University of Luxembourg offers the opportunity to meet students from all over the world.

Learn more about the Master of Data Science at the University of Luxembourg at this link.

ICON STARF conference

The International Conference on Statistics and Related Fields (ICON STARF) will take place the 12-16 July 2021 and will be fully virtual. The conference is free of charge but you need to register on the event webpage to have a chance to attend the top-level presentations made by our panel of international experts in the field.

ICON STARF

12-16 July 2021