

Inaugural Meeting Graduate Programme 'Information & Knowledge Society'



October 4&5, 2023
at Amphi A, LILIAD



The 'Information & Knowledge Society' Graduate Programme is a stimulating, competitive and innovative environment that gathers Master's and PhD students in the fields of computer science, data science, mathematics, physics, nanoscience, biotechnology, cognitive sciences and philosophy. It prepares students to work together to tackle on the challenges of the digital world, humanising the digital society, mastering complexity with innovative concepts and designing disruptive technology.

The Graduate Programme is pleased to invite you to its annual meeting on 4th and 5th October 2023. This event will be an opportunity for to present the initiatives and resources offered to support all Graduate Programme students in their professional and academic projects.



09h00 General Presentation of the 'Graduate Education in Lille' (GRAEL) project and of the Graduate Programme 'Information and Knowledge Society'

Marc LEFRANC – Scientific Coordinator of the Graduate Programmes of Ulille, and head of the IKS programme

09h30 Presentation of the different master tracks

The different master tracks comprising the IKS programme will be presented by students from the respective tracks.

10h30 Coffee break

11H00 Towards trustful image processing: taking benefit from machine learning

Pierre CHAINAIS (CRISAL)

11h30 Vortex nucleation in cold atoms

Quentin CHAULEUR (Laboratoire Paul Painlevé)
Radu CHICIREANU (PhLAM)

12h00 Flash Poster Presentation

PhD students from the Graduate Programme will highlight their research

- Loïc FACHE (PhLAM). Soliton gases in optics and hydrodynamics
- Jérémy ZURCHER (LPP). Geometrical aspects of solutions of stochastic differential equations
- Yasmine BOUSBAA (IEMN). Memristors based on 2D materials for low-power neuromorphic computing
- Eloise LEFEBVRE (PhLAM). Design of a 3-photon endoscope
- Fawzi BOUAKKAZ (IEMN). Printed flexible 2Dmaterials-based electronics for radio-frequency use
- Tychique NZALALEMBA (CRISAL). Modeling the dynamics of motion: combining theoretical models and models from experimental data
- Clément CARLIER (LPP). Mathematical modeling of the dynamics of forest ecosystems in a changing environment
- Youssef HAMD AOUI (IEMN). Development of new vertical power components in GaN on silicon.
- Samuel DENTAN (LPP). Real structure on “fans” and topology of real algebraic manifolds.
- Morgane FERRANDINI (LAMCube). Infant skeletal and soft tissue growth: towards the prediction of complications in the birthing process: coupling finite element method to deep learning models (DeepGrowth)
- Antonella Tannous (L2EP). Integration of an AI module for online optimal adjustment of an energy management system.

12h30 Lunch Break

With PhD students from the Graduate Programme available to discuss their research and their experience of a PhD thesis

14h00 **And the number became word: Ethics of generative AI**

Alexei GRINBAUM (CEA Saclay). By video-conferencing.

Old or young, simple ChatGPT users or computer experts, we face the advent of a new era, that of talking machines. Human users are fascinated by the performance of transformer-based chatbots with self-learning capabilities. What knowledge do they have? What kind of unpredictable behavior can emerge? In the past, this fascination was the mark of our conversations with non-human entities that populated myths. Chatbots produce an effect on us that is as illusory, and as real, as the impression left by gods, oracles, angels or demons. Between the prowess of digital technology and ancient stories, we'll reflect on the technological, political, and metaphysical shifts in a world in which we no longer have the monopoly on linguistic expression.

Alexei Grinbaum is senior research scientist at CEA-Saclay with a background in quantum information theory. He writes on ethical questions of emerging technologies, including nanotechnology, synthetic biology, robotics and AI. Grinbaum is the chair of the CEA Operational Ethics Committee for Digital Technologies and member of the French National Digital Ethics Committee (CNPEN). He contributes to several EU projects and serves as a central ethics expert to the European Commission. His books include "Mécanique des étreintes" (2014), "Les robots et le mal" (2019), and "Parole de machines" (2023).

14H45 **Nanotechnology approaches in wound healing**

Sabine SZUNERITS (IEMN)

The incidence of chronic wounds is increasing due to our aging population and the increase of diabetic people. With the extended knowledge on the biological mechanisms underlying these diseases, there is an influx of medical technologies into the conventional wound care market. Several nanotechnologies will be discussed and their unique characteristics that address specific problems related to wound repair mechanisms addressed.

15H30 **Coffee break**

16H00 **Recent trends on human face and body generation**

Mohamed DAOUDI (CRISTAL). By video-conferencing.

Generating novel sequences of human facial expression, or body to form a natural and plausible action with continuous and smooth temporal dynamics is a challenging problem. In this talk I will present some of our recent achievements addressing generating 2D and 3D face, and human body action and interaction.

16H45 **TBA (Biological systems...)**

Chann LAGADEC (CANTHER)

François ANQUEZ (PhLAM)

17H15 **TBA (Robotics...)**

Rochdi MERZOUKI (CRISTAL)

17H45 **Cocktail**

October 5, 2023 @ LILLIAD, amphitheater A

09H00 **Presentation of the main technological platforms of the "Human-friendly digital world" hub of ULille**

- Maan EL BADAoui EL NAJJAR : PRETIL (robotics).
- Jan GMYS : Grid'5000 (high performance computing)
- François VAURETTE : Micro and Nanofabrication center@IEMN
- Yann COELLO : IrDIVE (Digital and interactive visual environments)
- Géraud BOUWMANS : Fibertech Lille (optical fiber fabrication center)
- Nathalie MITTON : FIT (Future Internet of Things)

10H30 Coffee break

11H00 Pursuing a PhD. During and after

Ludovic MACAIRE – director of the MADIS doctoral school

Henri HAPPY – director of the ENGSYS doctoral school

Fabienne HIEN – SHS doctoral school

Cédric MARINEL – EOMYS Engineering

12H30 Lunch break

14h00 International mobility, LILAGORA social network

15H00 Methods and Tools for tactile & gesture-based interaction

Frédéric GIRAUD (L2EP)

The presentation covers the themes of the IRCICA "tactile and gesture interaction" team, which include classic interaction techniques and sensory feedback of information, which results from the collaboration on the interaction device "StimTac".

15H30 Coffee break

16H00 Quantum information and technologies: what can we do with them?

Alexandre FELLER (PhLAM)

The development of quantum technologies is really booming since the last few years with the promise to offer more efficient communication, sensing and computational devices. In this talk, we will present broadly the research fields of quantum physics and quantum information and how we can use them to think about new technologies.

16H30 Round table and open discussion

17h30 Cocktail

