

## Wireless sensing and supply

Recently, wireless sensing and remote power supply of embedded sensors have been widely developed for robotics and mechatronic systems helping to increase their intelligence, allowing them to have better mobility and to operate in harsh environments. The development of these robotic and mechatronic systems at different scales (micro to macro) and based on different technologies is regularly accompanied by the development of suitable sensors with specific physical principles and technologies, adapted size and shape, and reasonable energy consumption for long-term functioning.

### Mentors



Frederic Lamarque is a full professor at the Mechanical Engineering department of UTC and member of Roberval Laboratory. He received a Ph.D. in electronics in 1998 of Université Paris Sud Orsay (Now Paris-Saclay University). From 2012 to 2019 he was successively the head of the Mechanical Systems Engineering department (until 2016) and the UTC coordinator for the NAMIS (Nano MicroSystems) international research group of CNRS (2015 - 2019). He is currently the head of the Mechanical Engineering department of UTC (2022 – 2025). His research interest focuses on sensors and instrumentation, photonic remote sensing (micro and macro scales), wireless microrobotics and micro-mechatronic systems design. He is the author of more than one hundred and thirty scientific publications.



Hani Al Hajjar is an associate professor at the mechanical engineering department of UTC and member of Roberval laboratory since 2015. He received the Ph.D. degree in photonics and telecommunications from Telecom Bretagne (Institut Mines-Telecom), Brest, France, in 2013. Since 2020, he is the coordinator of outgoing exchange students of the mechanical engineering department. He is member of the Laboratory of Excellence "Control of Technological Systems of Systems" (labex MS2T). His research interests include high resolution optical localization and tracking, photonic energy harvesting at microscale, optical sensors, micro-mechatronic systems, opto-mechatronic systems, optical wireless actuation and optical wireless communications. He is the author of more than fifty scientific publications.

### Student profile

Master in mechanical, mechatronics, or electrical engineering, or final undergraduate in mechanical, mechatronics, or electrical engineering.

### Subjects

Design and integration of sensors for harsh environments

Fabrication, integration and instrumentation at micro/meso-scale

Remote power supply of robotic and mechatronic systems

Wireless and embedded sensors in robotic and mechatronic systems