

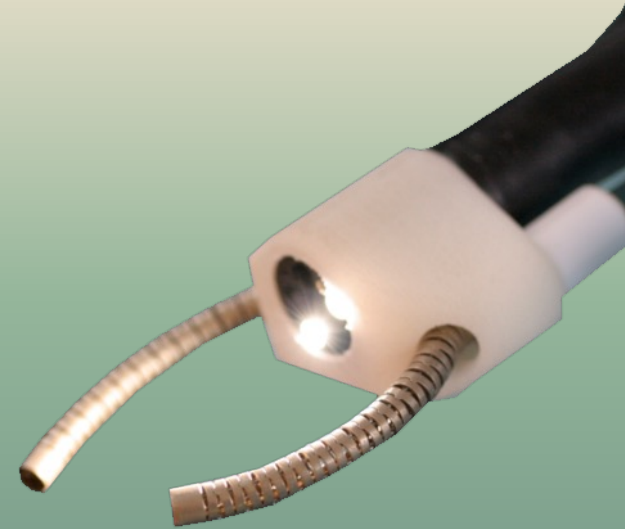
Information Sciences and Technology for Healthcare |

HealthTech

The **Interdisciplinary thematic institutes**

of the **University of Strasbourg** & **CNRS** & **Inserm**

funded under the **Excellence Initiative** program



HealthTech Graduate School Presentation



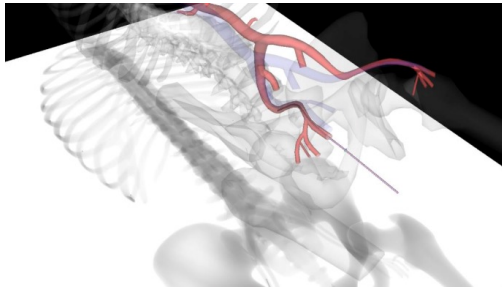
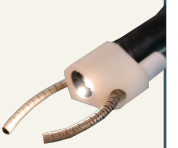
Bernard Bayle HealthTech Project Coordinator

Florent Nageotte HealthTech Master track Coordinator



Institute of information sciences and technology for healthcare

Created in 2020 – Confirmed in 2024

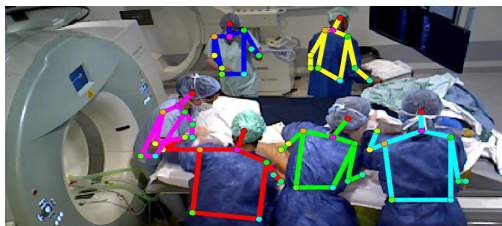


Credit: S. Cotin, Inria/ICube



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Credit: ICube



Credit: CAMMA & ICube

Research cluster

- Two main research axes:
 - (i) systems for assisting diagnosis and medical and surgical procedures
 - (ii) science of medical data and patient modeling
- Cross-disciplinary and translational approach to the medical device, on the scientific level but also including ethical, societal and economic issues

Graduate school

- International Master to PhD training program
- Training through research



Master's degree in Science, Technology and Healthcare from the *University of Strasbourg*, with a specialty in HealthTech

HealthTech | Consortium: a dynamic and high-level environment

151 permanent researchers

+ many PhD and Master students positively impacted

> 2 Laboratories



> 5 Institutions and faculties



> 4 Research and transfer partners



> 3 Doctoral Schools



HealthTech program at a glance

- International graduate program fully taught in English (B2 level expected)
- Early hands-on experience in a research laboratory
- Fellowships for selected HealthTech fellows
- Networking & cultural events for international students
- Opportunities for PhD studies and the creation of start-up companies



2022 diplomation

2024 diplomaton

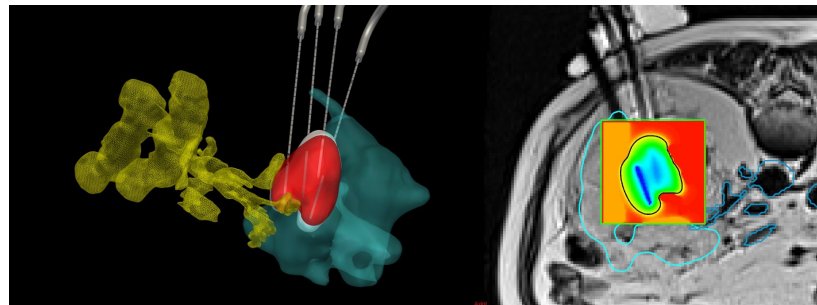
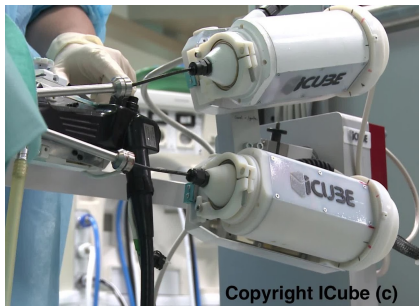
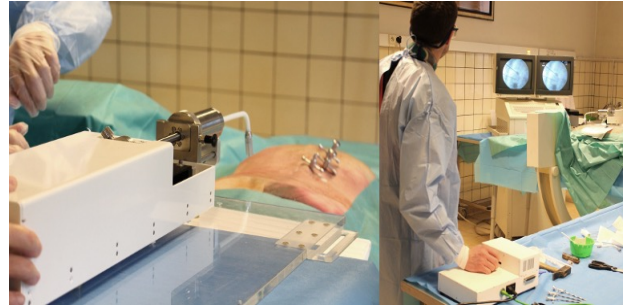
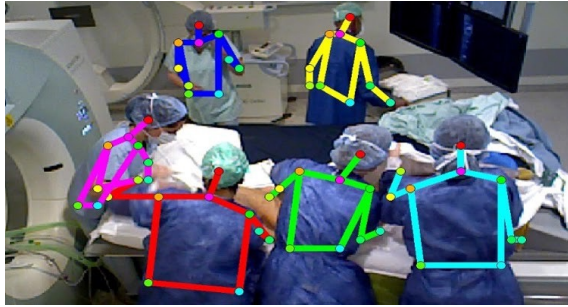


A site of excellence at the **University of Strasbourg**

- ✓ One of the first universities in France
- ✓ World class research facilities
- ✓ Top-level partners in innovation
- ✓ A great quality of life for students

International graduate program

- Elective courses
- Pluridisciplinary training
- Project-integrated teaching



On top of acquiring specific scientific skills, HealthTech students will also acquire the ability to understand the stakes and challenges relative to innovation in healthcare



Research



Economics & innovation



Biomedical engineering



Robotics & Medical devices



AI & Data science



Medical imaging



Biomechanics & simulation

**Start around
sep. 8**

Master 2 – Fall semester TEACHING UNITS & COURSES			ECTS
COMMON CORE Quantitative physiology • Computer-assisted medical interventions • Creativity and innovation: an introduction			6
TRAINING THROUGH RESEARCH M2 Research project			8
HEALTHTECH DISCIPLINARY COURSES (<i>elective courses: 2 teaching units out of 6</i>)			8 each
MODELING AND SIMULATION	MEDICAL ROBOTICS	BIOMECHANICS	
Modeling of living systems • Real-time simulation • Graphical and geometrical modeling	Robotics • Medical robot vision • Robot registration • Robot control	Continuum mechanics • Mechanical behavior of biological tissues • Multiscale modeling • Simulation in biomechanics	
IMAGING PHYSICS	MEDICAL IMAGE PROCESSING	ARTIFICIAL INTELLIGENCE	
Basics of medical imaging • Biomedical acoustics • MRI physics • Optical imaging • Advanced MRI and clinical applications	Introduction to medical images processing • Methods in advanced medical image processing • Modalities and medical insight	Introduction to AI • Machine learning • Deep learning • Selected topics in AI	
Master 2 – Spring semester TEACHING UNITS & COURSES			ECTS
END-OF-STUDIES INTERNSHIP Master thesis oral defense • Written report • Internship work			27
TRAINING THROUGH RESEARCH Initiation to research			3

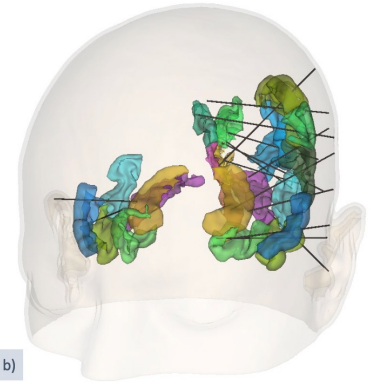
**Defense early
sep.**

Master research projects

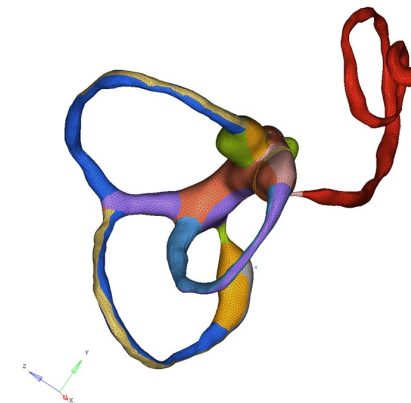
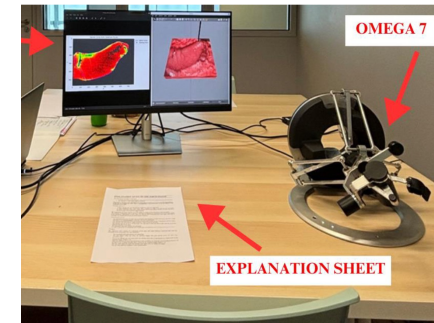
- Training through research: early immersion in a research laboratory of the HealthTech consortium
- Individual research projects throughout the academic year
 - **Fall semester** – at least one day per week dedicated to the research project
 - **Spring semester** - 5 to 6-month end-of-studies internship

Examples of research projects pursued in 2023/24

- Fast and accurate planning for minimal electrode deployment in SEEG surgeries for epilepsy
- Effects of haptic guidance in telemanipulated robotic surgery scenarios
- Design and Prototyping of Parsimonious Technologies for Upper-Limb Muscle Activation
- Simulation and numerical modelling of the vestibular system: focus on clinical tests
- Autonomous robot control of catheters: an optical fiber and deep neural network-based method to estimate the 3D position of endovascular devices



Credit: C. Essert, ICube



Credit: D. Baumgartner, ICube



Credit: B. Bayle, ICube

HealthTech Master fellowship

 ≈ 9k€ to 11k€

- **950€/month** for the 5 months of the fall semester for 2nd year Master fellows
- 500€ to cover **relocating expenses** for incoming students
- 600€ to cover **travel expenses** for students living at less than 4000km from Strasbourg (*upon arrival*)
- 80% of the total fellowship for the academic year will be delivered at the end of the registration process (≈October)
- The remaining 20% will be delivered after completion of the academic year and reception of the academic transcripts of both semesters

Master 2 internship grant: spring semester

- End-of-studies internship in a HealthTech-affiliated laboratory
- Internship grant (3.9€/h i.e. **≈600€/month** for the 5 to 6 months of the internship)

After validating the two semesters Healthtech fellows obtain the **IRIV Master, with Healthtech specialty**, from the University of Strasbourg

Training environment

- Small groups (max. 25 students), direct interaction with teachers
- Involvement of expert teachers (Professors, Chairs-holders, Researchers)
- Specifically developed courses
- Access to Telecom Physique Strasbourg facilities (high-rank engineering school)



Research environment

- Involvement of top researchers at ICube laboratory, IHU, INRIA
- Large scope of research fields (robotics, AI, image processing, simulation, biomechanics, imaging physics)
- Interactions with medical doctors



Studies / life quality

- Strasbourg is a medium-size city, student city
- Cultural immersion program
- Scholarship
- Internship grant



If you are a high-ranking student interested in biomedical engineering... join us !

- ≈ 10 places for incoming M2 students
- 22/23 : 4 students from Polimi – 23/24 : 2 students – 24/25 : 2 students



eCandidat

Plateforme d'admission

Université de Strasbourg

Application procedure for Polimi students

- 1/ Apply for Erasmus + mobility to Strasbourg at Polimi (**now**)
- 2/ Apply to Healthtech program. Applications will be opened **in March 2025** on the « **eCandidat** » online platform
- 3/ Selection after evaluation by the pedagogical committee based on the application file – **results early June**

Full application procedure available on the « **admission** » **page of our website**

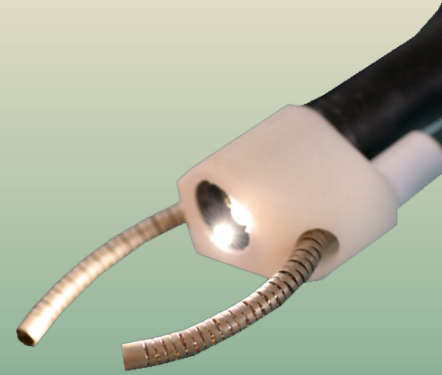


<https://healthtech.unistra.fr>

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Strasbourg, France



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Discussion

For further information

- Information on the program
- Information on the IRIV master
- Contact for additional inquiries

<https://healthtech.unistra.fr>

<https://www.master-iriv.fr/international/healthtech>

iti-healthtech-master@unistra.fr



Graduate school coordination team



Bernard Bayle

HealthTech Project Coordinator

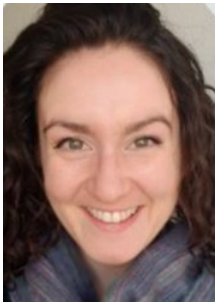
Professor in robotics at Telecom Physique Strasbourg
Research Scientist at ICube Laboratory



Florent Nageotte

HealthTech MSc Supervisor

Professor in robotics and computer vision at Telecom Physique
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