Information Sciences and Technology for Healthcare | HealthTech

The **Interdisciplinary thematic institutes**

of the **University of Strasbourg** & cnrs & **Inserm**
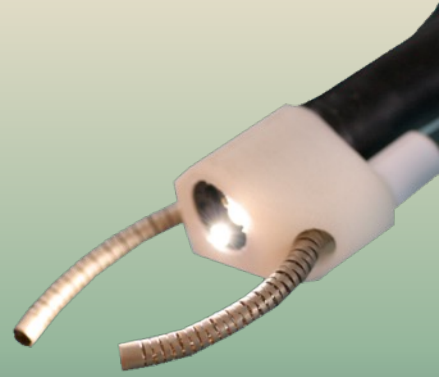
funded under the **Excellence Initiative** program

HealthTech
Graduate School Presentation

Florent Nageotte HealthTech Project Coordinator - Master track Coordinator

INVESTIR L'AVENIR

École d'ingénieurs | Master **IRIV**
Télécom Physique Strasbourg 1

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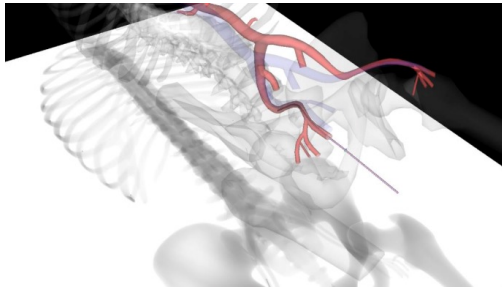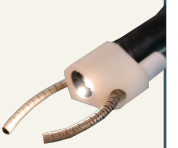funded under the **Excellence Initiative** program

What is HealthTech ?

Institute of information sciences and technology for healthcare

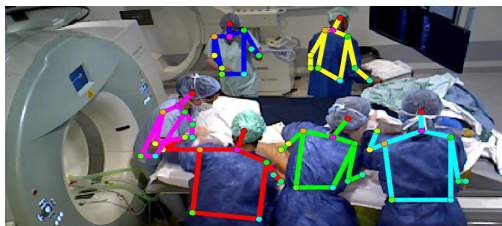Created in 2020 – Confirmed in 2024

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

160 permanent researchers

68 current PhD students

22 MSc fellows currently enrolled

+ many Master students positively impacted
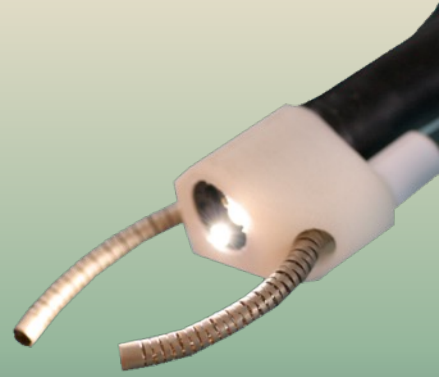
> 2 Laboratories

> 5 Institutions and faculties

> 4 Research and transfer partners

> 3 Doctoral Schools

Training program

HealthTech program at a glance

2025 diplomation

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

2024 diplomation

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

HealthTech | Second year Master training program

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 *(elective courses: 2 teaching units out of 6)*		8 each

MODELING AND SIMULATION	MEDICAL ROBOTICS	BIOMECHANICS
Modeling of living systems ● Real-time simulation ● 3D modeling & visualization	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

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

Scanning probe OPM by MediSCAPE

In-vivo epithelial imaging with OPM
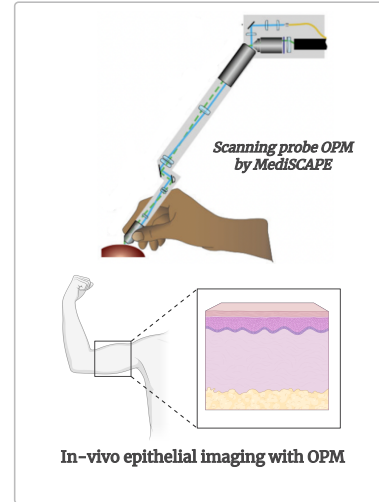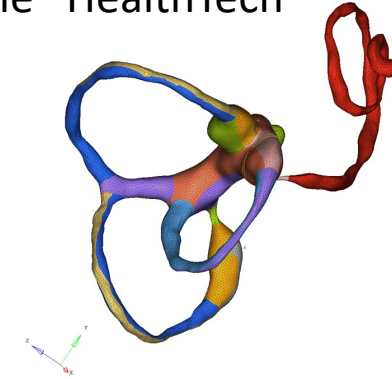
Examples of research projects pursued in 2024/25

- Biomechanical modeling and numerical simulation of peripheral vertigo

- Multiple Slice-to-Volume Registration for free-hand Oblique Plane Microscopy (OPM)

- Enhanced Animal Well-being and Preclinical Research Quality

- Developing physics-aware deep-learning approaches for real-time acoustic simulation for blood brain barrier opening planning

- Design and Control of a Haptic Interface for Collaborative needle Insertion Training
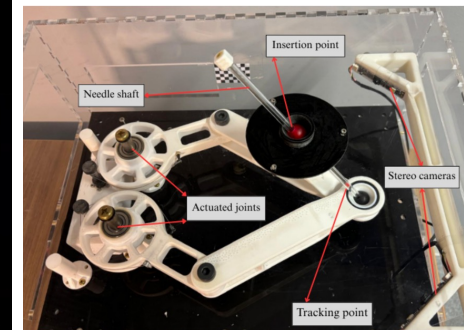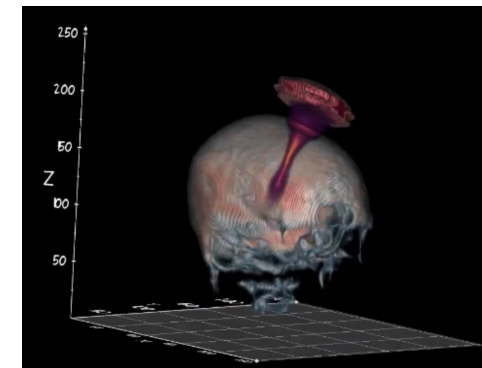
HealthTech Master fellowship

≈ 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

- Medium-size, student city
- Cultural immersion (French courses – Cultural tours)
- Scholarship

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

- ≈ 10 places for incoming M2 students
- Past and current fellow students from Polimi: 22/23 : 4 – 23/24 : 2 – 24/25 : 2 – 25/26 : 4

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 2026** on the « **eCandidat** » online platform
- 3/ Selection after evaluation by the pedagogical committee based on the application file – **results early June**

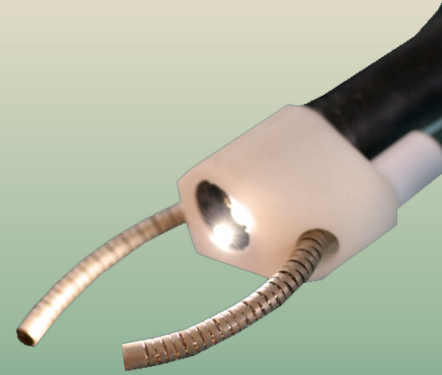Full application procedure available on the **« admission » page of our website**

https://healthtech.unistra.fr

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Strasbourg, France

Discussion

For further information

▪ Information on the program   https://healthtech.unistra.fr

▪ Information on the IRIV master   https://www.master-iriv.fr/international/healthtech
https://www.master-iriv.fr/m2/parcours-healthtech

▪ Contact for additional inquiries   iti-healthtech-master@unistra.fr

Graduate school coordination

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