

EDUCATION

- Laboratoire d'Informatique de Paris 6, Sorbonne Université** Paris, France
PhD in Engineering Sciences From Nov 2023
- **Title:** Develop a versatile embedded system for monitoring physiological signals
 - **Advisor:** S. Feruglio, Associate Professor (HDR), J. Denoulet, Associate Professor
 - **Keywords:** Biomedical engineering; Wearable technology; Embedded systems
- Institut Supérieur de l'Électronique de Paris** Paris, France
Diplôme d'Ingénieur with Grade de Master in Embedded Systems 2021 - 2023
- Graduated with honors (Mention: Très Bien)
- Lanzhou Institute of Technology** Lanzhou, China
Bachelor of Science in Vehicle Engineering 2016 - 2020
- Excelled in Microcontroller Principles and Electronic Systems

PROFESSIONAL EXPERIENCE

- Development of an Optical Spectroscopy System for Ankle Ligamentoplasty Study**
Laboratoire d'Informatique de Paris 6 Feb 2023 - Sept 2023
- By simulating light propagation in biological tissue, the feasibility of using Near-Infrared Spectroscopy (NIRS) to detect ankle ligament conditions was explored. A medical device and optical control system were developed, and 3D modeling was used to validate the device's feasibility. The results have a positive impact on postoperative recovery following ligamentoplasty.
- Automation and real-time operating systems**
Institut Supérieur de l'Électronique de Paris Oct 2022 - Jan 2023
- Developed a vehicle control system using fuzzy logic and PID control on MATLAB and Simulink platforms, enabling the vehicle to automatically stop under specific conditions. Integrated an RTOS for real-time sensor data processing and task scheduling, ensuring precise braking and reliable execution of control tasks.
- Development of Search and Rescue Robot**
Institut Supérieur de l'Électronique de Paris Sept 2022 - Jan 2023
- The robot is centered on the DE10-Standard, programmed using Python, C, and Verilog, and features three search patterns for target detection and object manipulation. It utilizes a gyroscope to determine turning angles and acceleration. When the camera detects the target (a red cylinder), the robot slowly approaches it, uses infrared sensors to measure the distance, and finally operates a robotic arm to grasp the object before returning to the starting point.
- Study on COVID-19 Transmission Dynamics**
Institut Supérieur de l'Électronique de Paris Apr 2022 - Jun 2022
- The study used Numpy for data processing, enabling efficient handling of large datasets. Regression analysis with Sklearn provided insights into COVID-19 transmission dynamics. This approach identified key factors influencing virus spread, improving the accuracy of predictive models.
- Fall Prevention Device Project**
Institut Supérieur de l'Électronique de Paris Sept 2021 - Jan 2022
- MATLAB was used for signal filtering, modulation, and demodulation, while fall detection was achieved using infrared sensors and a microphone. The project involved converting the analog sound signal into a digital format for further analysis, enhancing detection accuracy.

- Developed an STM32-controlled wireless bus stop reporting system using nRF24L01 for real-time communication between buses and stops. Designed circuits with Altium Designer and AutoCAD, ensuring reliable, low-power RF data transmission.

Internship in Automotive Parts Design and Manufacturing

DongFeng Engine Manufacturing

Sept 2019 - Dec 2019

- Gained practical experience in casting and welding processes. Developed proficiency in 3D modeling, designing vehicle driveshaft components using CATIA and AutoCAD, with a focus on precision and mechanical integrity.

**TEACHING
ACTIVITIES**

Introduction to Project Electronics and Simulation Tools

Électronique, Énergie électrique, Automatique | Sorbonne Université

- This course aims to enhance the coherence of electronic engineering instruction at the L2 level, covering both analog and digital electronics. It includes SPICE simulations and hands-on projects on circuit boards, allowing students to apply their skills to more complex projects.

Analog Electronics II

Électronique Informatique | Polytech Sorbonne

- This L3-level course covers the modeling and biasing of components (diodes, transistors) and circuits, along with the design of MOS amplifiers and electronic functions. It emphasizes mastering LTspice for simulation, with practical testing and validation through component assembly and measurements.

Microcontroller I

Électronique Informatique | Polytech Sorbonne

- This course introduces the core functionalities of STM32 microcontrollers at the L3 level, covering digital I/O, signal generation, development environments, state machine implementation, and code organization, with practical experience in developing microcontroller-based systems.

**INTERNSHIP
SUPERVISION**

Laboratory project research internship by C. Hondemarck and A. Akil

Supervisors: S. Feruglio, I. Saliba, W. Wang

L3 for 3 months

- As part of a lab research project, students assessed the feasibility of using NIRS to test ankle ligaments, participating in experimental measurements and analysis, and conducted simulations of light propagation in biological tissues using specialized software.

Improvement of a physiological signal measurement system by H. Li

Supervisors: S. Feruglio, W. Wang

M1 for 4 months

- Developed a low-cost IoT biomedical system to measure physiological parameters in real-time. Integrated sensors with a microcontroller, using Bluetooth Low Energy for data transmission, and created prototypes (PCB, 3D design) for high-speed, high-resolution monitoring and data analysis.

Monte-Carlo optical simulation of biological tissues by P. Bouchard

Supervisors: S. Feruglio, W. Wang

M1 for 2 months

- Enhanced software for simulating light propagation in multilayered tissues for NIRS, improving photon detection accuracy with tunable photodetectors and wavelength control. Validated results via literature studies and developed a GUI to modify optical parameters of the bio-tissue.

PUBLICATION	<ul style="list-style-type: none"> • I. Saliba, A. Hardy, W. Wang, R. Vialle, S. Feruglio. A Review of Chronic Lateral Ankle Instability and Emerging Alternative Outcome Monitoring Tools in Patients following Ankle Ligament Reconstruction Surgery. DOI: 10.3390/jcm13020442
CONFERENCE	<ul style="list-style-type: none"> • The National Colloquium of the GDR SoC², 10-12 June 2024, Toulouse, France • 31st IEEE International Conference on Electronics Circuits and Systems, 18-20 Nov 2024, Nancy, France
SKILLS	<p>Languages: Chinese (<i>Native</i>), English (<i>Advanced</i>), French (<i>Fluent</i>)</p> <p>Programming: C, C++, Python, R, Verilog</p> <p>Microcontrollers: Arduino, STM32, nRF5340, ARM Cortex, DE10-Standard/Lite</p> <p>CAD Software: Altium Designer, LTspice, AutoCAD, Fusion 360, Solidworks, CATIA</p> <p>Development tools: MATLAB/Simulink, Quartus, Keil, LaTeX, Visual Studio Code</p> <p>Frameworks: FreeRTOS, Zephyr, ARM mbed, PyTorch</p>
OTHERS	<p>Hobbies: <i>Guitar, drums, sketches, swimming</i></p> <p>Volunteer experience: <i>Paris 2024 Olympic and Paralympic Games</i> <i>MIDI 2021 Music Festival – Taihu Edition</i></p>