About me

Currently Ph.D. student and Research Engineer at FEMTO-ST Institute. I design, fabricate and control a deformable continuum robot for middle ear surgery. With over 4 years experiences of working on different professional projects: both academic and industrial, I am looking for a job in R&D for September 2022. I learn and adapt quickly to be rapid operational.

Contacts

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Skills

- **Programming**
  MATLAB, Python, C++, C, Qt, Linux Xenomai
- **CAD & Mesh**
  SolidWorks, AutoCAD, Meshlab
- **Simulation**
  GUI, Simulink, Blender

Langues

- **French**
  Professional working proficiency
- **English**
  Professional working proficiency
- **Vietnamese**
  Native language

References

- **Kanty Rabenorosoa**
  Associate Professor at FEMTO-ST
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- **Jérôme Szewczyk**
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- **Yann Nguyen**
  ENT Surgeon at Pitié-Salpêtrière Hospital (AP-HP)
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Dang-Viet-Anh NGUYEN

Engineer in Smart Systems & Devices – Biomedical robotics

Experience

FEMTO-ST Institute — 10/2018 – Present

MicroRobot-assisted Cholesteatoma Surgery – µRoCS project

Research Engineer - PhD Student in Biomedical Robotics — Besançon, France

Topic: *Hybrid Continuum Robot for Middle Ear Surgery: Design, Fabrication and Control*

- Conception & design:
  - 3D reconstruction and post-processing the mesh of a patient's ear based on CT scan DICOM images using **Invesalius**, **MeshLab**, and **SolidWorks**.
  - Proposition of a hybrid concentric tube robot dedicated for middle ear laser surgery.
  - Modelization of the proposed robot and solving related problems (*BVP*, *FEM*, *shortest path algorithm*, *inverse design problem*) using **MATLAB**.
  - Simulation, visualization, and analysis of the robot behavior within the anatomy using **Graphical User Interfaces (GUIs)** and **C++**.
  - Optimization of the robot's design parameters based on the robot workspace.
- Fabrication:
  - Preparing the **CAD** file using SolidWorks for fabricating the robot components.
  - **Micro-Nano manufaturing** the robot components and the ear 3D model including: *nanoscribe 3d printing*, *femtoprint*, *electrical discharge machining*, *tube shape setting*.
  - Lightweight and compact prototype for the integration on the **otologic robot RobOtol**.
- Control & programming:
  - Developing a **realtime GNU/Linux** operating system (using **Xenomai**) to control the robot via **TCP/IP protocol** and through an **EtherCAT slave card**.
  - Developing an interface using **Qt Creator** to operate the robot.
- Experimental validation & other tasks:
  - Measuring the position/orientation of the robot tip using **AURORA Sensors**.
  - **Image processing** for robot repeatability and laser ablation with **OCT volume scan**.
  - Deploying the robot within the ear phantom model and demonstrating laser ablation of the infected cells (cholesteatoma) collected from Besançon Hospital.
  - Writing technical reports and publishing research articles.
  - Participation in monthly technical meetings with scientists, surgeons and engineers in the µRoCS project team.

LCIS Laboratory – Grenoble INP - UGA — 07/2017 – 07/2018

Research Engineer – Graduation Project — 02/2018 – 07/2018

Topic: *Power Balancing in a DC-meshed Microgrid through Constrained Optimization*

- Analysis of the weather forecast and the power consumption data.
- Modeling the transmission network of the meshed DC microgrid architecture.
- Optimization energy distribution for the load balancing problem in the transmission network using Model Predictive Control (MPC) based on the collected data.

Innovation Project Intern — 07/2017 – 02/2018

Topic: *Simulation, Control and Experimental tests on the Humusolt CE 150 helicopter system*

- Modelization and control (**PID**, **LQR**, **MPC**) of the laboratory helicopter system.
- Testing & implementation on the system.
- Team leader.

LAVI - Distributeur Officiel d'Accessoires VDL — 01/2017 – 07/2017

Industrial Engineering Intern — Valence, France

Topic: *A mini smart water treatment station for motorhomes*

- Design of a Printed Circuit Boards (**PCB**).
- Human Machine Interface (**HMI**) development.
- Sensors and Signal processing with **STM32**.

Nhat Tinh — 07/2015 – 08/2015

Industrial Engineering Intern — Vietnam

- Mechanical drawing with SolidWorks.
- Electrical panel & mechanical assembly.

Teaching

SUPMICROTECH-ENSMM — 10/2019 – 09/2021

Teaching Associate

- Lectures and practical works for undergraduate students in automation and control.

Education

PhD in Automatic & Biomedical Robotics — 10/2018 – Present

Université Bourgogne-Franche-Comté (UBFC)

Engineer in Electronics, Informatics and Systems — 9/2016 – 9/2018

École nationale supérieure en systèmes avancés et réseaux (Grenoble INP - ESISAR)

Eiffel Excellence Scholarship Program 2016 (the French Ministry for Europe & Foreign Affairs)