



Dang-Viet-Anh NGUYEN

Engineer in Smart Systems & Devices – Biomedical robotics

Experience

FEMTO-ST Institute 10/2018 – Present
MicroRobot-assisted Cholesteatoma Surgery – μ RoCS 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 manufacturing** 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 μ RoCS 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 – 12/2017

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

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

LAVI - Distributeur Officiel d'Accessoires VDL 01/2017 – 07/2017
Embedded System Engineer - Industrial Project Valence, France

Topic: *A mini smart water treatment station for motorhomes (EZA Water)*

- Printed Circuit Boards (**PCB**) design & 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.

About my projects, publications, and awards, I cordially invite you to visit [my website](#)

Teaching

SUPMICROTECH-ENSMM 9/2019 – 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)

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

Languages

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

References

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