Bassem DAHROUG

PhD, Mechatronics Engineer

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Experienced robotics and mechatronics engineer with a PhD in Engineering Sciences and ten years of hands-on experience in space robotics, surgical robotics, and advanced control systems. Passionate about developing autonomous systems and digital twins for challenging environments. A full version of my CV is available on the website https://bdahroug.github.io/assets/DAHROUG_longCV.pdf.

Experience

Robotics Engineer - Control & Mechatronics *Mar. 2023 – Jun. 2025*
ROVIAL Space, Toulouse, France

- Participate in the research and development of robotic systems for on-orbit servicing applications
  - design and develop mechatronic systems by using different robotic structures (e.g., manipulator arm, legged robot) for performing assembly and repair tasks;
  - develop a low-level and high-level controllers for guiding the robotic system by computing forward and inverse kinematics, as well as dynamics ones;
  - create experimental proof-of-concept to validate the developed robotic system;
  - collaborates with other departments, such as Structure and Space, to gather requirements and specifications.
- more information about my contribution to this project is available on the website https://bdahroug.github.io/2023/01/01/rovial.html.

Mechatronics Engineer *Jun. 2021 – Nov. 2022*
AMAROB Technologies, Besançon, France

- Participation in different innovative projects
  - design, simulation, manufacturing, and programming of mechatronic devices, in particular, the micro-robotic systems dedicated to intracorporeal laser surgery that AMAROB proposes;
  - validation of the devices developed with AMAROB's collaborators, including partner hospitals and AMAROB's customers.

Researcher, Post-doctoral *Sep. 2018 – Dec. 2020*
Institute FEMTO-ST, Department AS2M, Besançon, France

- participate to the INSERM project "*ROBOT*" which proposes an innovative approach to detect the cancer cells at the digestive tract;
  - implement a visual servoing scheme based on the 3D imaging (C-scan) obtained from the OCT (Optical Coherence Tomography) for guiding a robot during the intra-operative phase in order to perform a repeatable optical biopsy;
- more information about my contribution to this project, as well as demonstration video, is available on the website https://bdahroug.github.io/2020/01/01/robot.html.

Education

Doctor of Philosophy in Engineering Sciences *Nov. 2014 – Feb. 2018*
UBFC, Besançon, France

- **Dissertation**: Minimally Invasive Surgery in the Middle Ear: a guided micro-robotic system to efficiently remove cholesteatoma.

Master degree in Mechatronics and Micro-Mechatronics Systems *Sep. 2012 – Sep. 2014*
joint masters degree from **ENSMM**, Besançon, France and **EPI**, Gíjon, Spain

- **Master thesis**: Design, modelling and control of a contactless modular conveyor.

Skills

- Robotic experimentation
- Mechatronic design
- Automatic control
- Scientific programming
- Mechanics
- Electronics

Know-how

- Organization, rigor and autonomy
- Analysis, synthesis and solving problems
- Oral and writing communication
- Project Collaboration

Computer skills

- FreeCAD, Solidworks
- G-Code, FreeCAD-Path
- KiCAD, Egale
- Matlab/Simulink, Octave
- COMSOL Multiphysics
- C/C++, CMake, Python, Java, micro-controller, TCP/IP, I2C
- ViSP, OpenCV, PCL
- Webots, RBDyn, DART, Bullet
- Magnum, VTK, Blender
- GIT, SVN
- Linux, RTEMS
- Gantt

Linguistics

- English
- French
- Arabic
- Spanish