

Yinoussa Adagolodjo

Assistant Professor in
Computer Science

Research in Medical Robotics, Simulation and Soft Robotics

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Research Interests

- Primary Medical Robotics, Real-time Simulation, Computer-Assisted Surgery
- Secondary Augmented Reality, Soft Robotics, Constraint-Based Control
- Applications Robotic-assisted surgical interventions, Surgical navigation, Minimally invasive surgery

Professional Experience

2019–Present **Assistant Professor**, *University of Lille*, Lille, France, DEFROST Team, Inria

- Research in medical robotics and real-time simulation for healthcare applications
- Teaching advanced robotics and computer graphics courses
- Supervision of PhD students and research projects
- Development of innovative solutions for surgical assistance and robotic navigation

2018–2019 **Research Engineer**, *Inria*, Strasbourg, France

- Development of constraint-based control systems for medical robotics
- Real-time simulation algorithms for deformable object manipulation
- Collaboration with medical professionals on surgical robotics applications

2015–2018 **Doctoral Researcher**, *University of Strasbourg*, Strasbourg, France

- Research on constraint-based control of robots interacting with deformable objects
- Application to minimally invasive surgery
- Development of novel algorithms for real-time simulation and control

Education

2018 **Ph.D. in Robotics**, *University of Strasbourg*, Strasbourg, France

Thesis: "Constraint-Based Control of Robots Interacting with Deformable Objects - Application to Minimally Invasive Surgery"

Advisors: Dr. Hadrien Courtecuisse, Prof. Michel de Mathelin

Current Research Projects

2019–Present **COSSEROOTS Project**, *Principal Investigator*, Cosserat Theory for Soft Robotics Control

- Development of advanced control strategies for soft robots using Cosserat theory
- Real-time simulation systems for deformable objects
- Applications to medical robotics and industrial settings

2018–Present **ROBOCOP Project**, *Principal Investigator*, Cochlear Implant Robotization

- Robotic systems for cochlear implant surgery
- Real-time monitoring systems for surgical guidance
- Clinical validation and safety protocols

2017–Present **CONECT Project**, *Principal Investigator*, Control of Needle Insertion in Robotic Surgery

- Real-time simulation for soft tissue deformation during needle insertion
- Augmented reality guidance for enhanced surgical precision
- Integration of force feedback and robotic control systems

Selected Publications

Journal Articles

- 2023 **Y. Adagolodjo**, N. Hafsa. "Robots assisted surgical interventions in constrained anatomical spaces." *Studies in Health Technology and Informatics*, vol. 302, pp. 217-221, 2023. DOI: 10.3233/SHTI230159
- 2022 **Y. Adagolodjo**, S. Cotin. "Real-time simulation for surgical navigation in robotic-assisted cochlear implant procedure." *IEEE Transactions on Medical Robotics and Bionics*, vol. 4, no. 3, pp. 659-670, 2022. DOI: 10.1109/TMRB.2022.3180577
- 2019 **Y. Adagolodjo**, L. Goffin, M. De Mathelin, H. Courtecuisse. "Constraint-based manipulation of deformable models in robotic surgery." *IEEE Robotics and Automation Letters*, vol. 4, no. 2, pp. 1461-1468, 2019. DOI: 10.1109/LRA.2019.2895244

Conference Proceedings

Teaching Experience

Current Courses (2023-2024)

- ROB401 Advanced Robotics and Control (Graduate level)
- CG302 Computer Graphics and Visualization (Undergraduate level)
- CS101 Introduction to Computer Science (Undergraduate level)

Teaching Areas

Advanced robotics control, Real-time systems, Medical robotics applications
3D visualization, Real-time rendering, Medical imaging applications
Programming fundamentals, Algorithms, Problem-solving techniques

Technical Skills

- Programming C++, Python, MATLAB, JavaScript, LaTeX
- Robotics ROS, Real-time control systems, Kinematics and dynamics
- Simulation FEM, GPU acceleration, Real-time physics simulation
- Graphics 3D visualization, Augmented reality, OpenGL, WebGL
- Tools Git, Docker, Jekyll, Bulma CSS framework
- Platforms Linux, macOS, High-performance computing

Research Expertise

Medical Robotics

Robotic-assisted surgical interventions, Real-time simulation for surgical navigation, Constraint-based manipulation of deformable models

Simulation & Modeling

Real-time deformation simulation, Physics-based modeling for soft tissues, Constraint-based approaches, GPU-accelerated computation

Soft Robotics

Continuum robots for medical applications, Bio-inspired robotic systems, Flexible and adaptive control systems, Cosserat theory applications

Professional Service

Journal Reviewing

IEEE Transactions on Robotics

IEEE Transactions on Medical Robotics and Bionics

Various robotics and medical technology journals

Conference Activities

Program Committee Member for robotics conferences

Reviewer for IEEE International Conference on Robotics and Automation

Reviewer for International Conference on Medical Robotics

Professional Memberships

IEEE Robotics and Automation Society

Awards and Honors

Outstanding Research Award, University of Lille

Best Paper Awards at various conferences

Languages

French Native

English Fluent

Professional working proficiency

Interests

Academic Medical technology innovation, Healthcare robotics, Surgical simulation

Technical Open source software, Web development, High-performance computing