# Valentina Becchetti

## PUBLICATIONS

[ 2024 ] **Dynamic Mode Decomposition for Individualized Model Predictive Control with Application to Type 1 Diabetes**

**Reference:** Published in: 2024 32nd Mediterranean Conference on Control and Automation (MED)

[ 2024 ] **Deep Reinforcement Learning Control of Type-1 Diabetes with Cross-Patient Generalization**

**Reference:** Published in: 2024 32nd Mediterranean Conference on Control and Automation (MED)

[ 2024 ] **An Insurtech Platform to Support Claim Management Through the Automatic Detection and Estimation of Car Damage from Pictures**

**Reference:** Published in: Electronics 2024

## EDUCATION AND TRAINING

[ 11/2023 – Current ] **PhD in Automatic Control**

*University of Rome "La Sapienza"*

**City:** Rome | **Country:** Italy |

[ 09/2021 – 10/2023 ] **Master's Degree In Control Engineering**

*University of Rome "La Sapienza"*

**City:** Rome | **Country:** Italy |

[ 09/2017 – 07/2021 ] **Bachelor Degree in Ingegneria Clinica**

*University of Rome "La Sapienza"*

**City:** Rome | **Country:** Italy |

[ 05/2016 ] **First Certificate in English**

*Cambridge English Language Assessment*

**City:** Rome | **Country:** Italy |

## COMMUNICATION AND INTERPERSONAL SKILLS

**Adaptability in challenging conditions**

**Effective Time and Stress Management in a Team Environment**

## DIGITAL SKILLS

**My Digital Skills**

Matlab/Simulik | Python Language - Basic knowledge | LaTeX (very good) | Machine Learning

## LANGUAGE SKILLS

**Mother tongue(s):** Italian

**Other language(s):**

**English**

**LISTENING** C1  **READING** C1  **WRITING** C1

**SPOKEN PRODUCTION** C1  **SPOKEN INTERACTION** C1

**Spanish**

**LISTENING** A1  **READING** A1  **WRITING** A1

**SPOKEN PRODUCTION** A1  **SPOKEN INTERACTION** A1

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## WORK EXPERIENCE

[ 10/2022 – 10/2023 ]  **Software Division in SASA: Sapienza Technology Team**

**City:** Rome  |  **Country:** Italy

Designing and programming a robotic arm for a rover prototype, working in team with students from multiple engineering fields.

Site: sasa-aerospace.it/tech-team

## PROJECTS

[ 06/2023 ]  **Model reduction using DMDc of the pancreas' glucose – insulin dynamics**

The project aim is to reconstruct and reduce thanks to Dynamic Mode Decomposition with Control algorithm a non-linear, time-variant, compartmental model of the glucose-insulin dynamics of a patient with type 1 diabetes that is simulated by the UVA-Padova Simulator. The model is composed by 18 non-linear equations and in the end we retrive 15 linear equations that approximate very well the overall dynamics.

[ 04/2023 ]  **A fully actuated quadrotor with a propeller tilting mechanism**

A new quadrotor design has been analyzed that uses two additional actuators to control the tilt angles of the propellers relative to the quadrotor body.

The system can be linearized at a higher differential order, resulting in a dynamic feedback linearization controller.

It is visualized and simulated both in Matlab and in the CoppeliaSim environment, and the results of specific tasks demonstrate the effectiveness of the additional actuations, compared to the classical solution.

[ 02/2023 ]  **Site Diversity in Downlink Optical Satellite Networks through Reinforcement Learning selection techniques**

The aim of the project is the problem of allocating the Free Space Optical satellites to the best possible Ground Stations (GSs), considering the availability and the current meteorological condition specific to each GSs. Two Reinforcement Learning (RL) methodologies, Q-learning and SARSA learning, are used to solve the above problem. Through simulations, it is seen that both the RL techniques outperform a baseline method with a fixed allocation choice.

[ 11/2021 ]  **Visual Servoing with dVRK simulator**

The aim of this project is to perform Image Based Visual Servoing (IBVS) using the Endoscopic Camera Manipulator (ECM) of the da Vinci surgical robot, equipped with two vision sensors. The task is to keep the two end effectors of the Patient Side Manipulators (PSMs) in the center of the field of view of the ECM cameras. Experiments are performed in the CoppeliaSim environment.