FRANCO FUSCO

Research & Development Engineer

Date of Birth 24 August 1993 Nationality Italian
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WORK EXPERIENCE

R&D Engineer (CDI)

Neurodec neurodec.ai

Mar 2022 – Mar 2025 Valbonne (FR)

Development and maintenance of MDT*, a Python/C++ simulator of myoelectrical activity. In charge of features implementation, bug tracking, documentation, automated testing & CI, data acquisition via specialized hardware, implementation of technical demos. Employed libraries: PyTorch, SQLAlchemy, Flask, PyQt, CGAL.

*Maksymenko *et al.*, "A myoelectric digital twin for fast and realistic modelling in deep learning." Nature Communications 14.1 (2023): 1600. available online

ATER

I3S Sophia Antipolis & IUT Nice Côte d'Azur

Sep 2021 – Feb 2022 Sophia Antipolis (FR) & Nice (FR)

Research activities: Investigation of novel control schemes based on a hybrid model-based and data-driven approach, using MPC techniques in conjunction with DNNs. Proof of concept developed on a custom Python simulator, using OpenAI Gym, OpenCV and Pytorch.

Teaching activities: 180+ hours between lectures and practical sessions (control theory, reinforcement learning, C & C# programming, linear algebra).

Post-doc on Advanced Robot Control

I3S Sophia Antipolis

Dec 2020 – Aug 2021 Sophia Antipolis (FR)

Study of parameterized MPC algorithms tailored for highly nonlinear systems with fast dynamics and limited computational power. Deployment on a RaspberryPi running a ROS-based control interface (low-level layer implemented in C++; high-level control nodes both in Python and C++).

EDUCATION AND TRAINING

Ph.D. in Robotics

LS2N Centrale Nantes

Oct 2017 – Nov2020 Nantes (FR)

Thesis: *Dynamic Visual Servoing for Fast Robotic Arms* – Worked with Kuka LWR cobots, controlled by custom algorithms developed in C++/ROS (using the ROS-Control framework). Extensive use of ViSP and OpenCV for image processing.

M.Sc. in Robotics

Università degli studi di Genova & Centrale Nantes

Sep2015 – Aug2017 Genoa (IT) & Nantes (FR)

Thesis: *Obstacle and Self-collision Avoidance with a Dual-arm Manipulator* – Experimenting with original sampling-based planning algorithms and integration in the MoveIt! (ROS) framework (6-months-long internship at Airbus Innovation, Méaulte).

B.Sc. in Mechatronics

Università degli studi di Padova

Sep2012 – Nov2015 Vicenza (IT)

Thesis: *Data Acquisition System for a Line-scan-camera of the Freescale-Cup Vehicle* – Development of a simple Java-based application for the visualization and analysis of data collected from a CMOS line-scan-camera controlled by a FRDM KL25Z microcontroller programmed in C.

SKILLS

Fast Learner | Hard-working | Team Player | Detail-oriented | Independent | Enthusiastic | C++ | Python | GIT | LaTeX | ROS | ViSP | PyTorch | C | C# | Java | Lua | JavaScript | Nonlinear Control | Applied Linear Algebra | Optimization Techniques | Machine Learning

PUBLICATIONS

[1] Fusco *et al.* (2020), Integrating features acceleration in Visual Predictive Control.

[2] Fusco *et al.* (2022), Benchmarking nonlinear model predictive control with input parameterizations.

[3] Isralov *et al.* (2023), Reinforcement learning approach to control an inverted pendulum: A general framework for educational purposes.

LANGUAGES

French
English
Italian (mother tongue)
Spanish

OTHER INTERESTS

Photography | Hiking | Scuba-diving | Skiing | 3D printing

REFEREES

Kostiantyn Maksymenko
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