FRANCO FUSCO

Research & Development Engineer

Date of Birth 24 August 1993
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Profile

With a background spanning robotics, applied mathematics, and software engineering, I bring a multidisciplinary approach to solving complex technical challenges. Proficient in C++ and Python, I move seamlessly between algorithm design, simulation, and system deployment. From developing control algorithms to building full-fledged applications, I enjoy bridging theory and practice to create intelligent, reliable, and efficient technologies that make a real impact.

Skills

Programming Languages C++, Python, C, C#, Bash, SQL, Java, Lua, JavaScript
Frameworks & Libraries Qt, ROS, Eigen, OpenCV, ViSP, CGAL, PyTorch, OpenAI Gym
Tools & DevOps GIT, GoogleTest, pytest, CI/CD, Docker
Documentation Sphynx, Doxygen, LaTeX
Operating Systems Linux (Ubuntu, Debian, Raspian), MS Windows
Soft skills Hard-working, Team Player, Independent, Detail-oriented, Fast Learner, Enthusiastic

Languages

French ..... Advanced (C1)
English ..... Full Proficiency (C2)
Italian ..... Mother Tongue
Spanish ..... Basic (A1)

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.

Projects

LPG Planner Qt application for the evaluation of optimal fueling stops during a road-trip
EigenOpt Optimization solvers written using the Eigen library
Template CMake Project Template repository for quick configuration of new C++ projects built with CMake, providing ready-to-use CI pipelines for testing and automatic documentation generation

Other Interests

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

Referees

Kostiantyn Maksymenko
CEO, Neurodec
kostiantyn.maksymenko@neurodec.ai

Work Experience

R&D Engineer

Neurodec neurodec.ai

Mar 2022 – Mar 2025 | Valbonne (FR)

Led the development of MDT*, a Python/C++ simulator of myoelectrical activity.
- Implementation of new features, automated testing & CI, bug tracking, documentation.
- Data acquisition via specialized hardware, development of GUIs and technical demos.
- Frameworks & Tools: PyTorch, SQLAlchemy, Flask, PyQt, pytest, CGAL, GIT.

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

Attaché Temporaire d'Enseignement et de Recherche

I3S Sophia Antipolis & IUT Nice Côte d'Azur

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

Investigation of novel control schemes based on a hybrid model-based and data-driven approach, in conjunction with university-level teaching activities.
- Study of MPC techniques in conjunction with Encoder-Decoder Neural Networks
- Development of a custom Python simulator for proof of concepts
- Frameworks & Tools: OpenAI Gym, OpenCV, Pytorch
- 180+ hours of teaching between lectures and practical sessions (control theory, reinforcement learning, C & C# programming, linear algebra)

Postdoctoral Researcher 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.
- Theoretical study, C++ implementation, benchmarking of optimal control algorithms
- Deployment on embedded hardware (Raspberry Pi) to demonstrate real-time feasibility
- Design of a ROS-based control interface with a low-level layer in C++ and high-level control nodes in both Python and C++
- Frameworks & Tools: Eigen, ROS-Control, ZeroMQ, GoogleTest, CMake

Education and Training

Ph.D. in Robotics

LS2N Centrale Nantes

Oct 2017 – Nov2020 | Nantes (FR)

Thesis: *Dynamic Visual Servoing for Fast Robotic Arms*
- Development of advanced algorithms leveraging visual sensory feedback
- Deployment and experimental testing on a pair of Kuka LWR cobots
- Comprehensive bibliographic research, authored conference and journal papers
- Assistant teacher (C++ & Python programming, sensor-based robot control) and mentor in student projects (robot programming, advanced modeling of robots)
- Frameworks & Tools: ROS-Control, Qt, ViSP, OpenCV

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*
- 6-months-long internship at Airbus Innovation, Méaulte
- Experimenting with original sampling-based planning algorithms
- Integration of a robotic platform with ROS
- Frameworks & Tools: ROS, MoveIt!, CoppeliaSim
- Academic achievements: ranked 1st of my class (final GPA 94/100)

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*
- Fimrware implementation (in C) for autonomous driving on a KL25Z microcontroller
- Development of a simple Java-based application for the visualization and analysis of data collected from a CMOS line-scan-camera
- Academic achievements: graduated *Cum Laude*