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Ali Elnwegy

Résumé

Summary

Mechatronics Engineer with a broad skill set, highly motivated and results-driven. Proficient in a wide range of programming languages. Possesses a strong academic background in Mechanics, Numerical Methods, Robotics, and Vibration. Specializes in Control theory, Optimal and Robust Control, and Multi-Agent Systems Control. Skilled in implementing various control schemes. Demonstrates a keen interest in conducting research and advancing knowledge in the field. Excellent analytical and problem-solving skills with a focus on academic excellence. Committed to continuous learning and staying at the forefront of new developments in the field. Strong communication and interpersonal abilities with a collaborative mindset.

Education

2019–now **M.Sc. in Mechatronics Engineering**,
Technische Universität Hamburg-Harburg, Germany

Master Thesis: **Multi-Layered Control of a Telemanipulation platform with Vibrotactile Feedback**
Design and implementation of a multilayered control architecture for the purpose of providing kinesthetic and vibrotactile feedback to an operator from a robot in a remote enviroment. Used techniques and languages: H_2/H_∞, MPC, C/C++, Matlab, Python, ROS

Project Work: Empirical Studies of Multi-Agent Formation Control over Stochastic Communication Networks
Study the effect of Markov-chain stochastic communication on Multi Agent System Control and provide different adaptive control schemes to mitigate its effects Used techniques and languages: H_2/H_∞, Matlab

2014–2019 **B.Sc. in Mechatronics Engineering**,
German University in Cairo, Egypt

Bachelor Thesis: Model Predictive Control of a Tower Crane
Apply Model Predictive Control scheme on a 5-DOF model of a tower crane and test it on a real-life miniature model. Used techniques and languages: MPC, Matlab

Publications

Conference WIP: Multi-Layered Control of a Bilateral Haptic Telemanipulation Setup using Collaborative UR10e Robots[1]
A work in progress explaining the architecture design of the Master Thesis
World Haptics Conference 2023

[1]WHC23: https://2023.worldhaptics.org/wp-content/uploads/2023/06/1157-doc.pdf

Experience

July 2022–Now	**Pentax Medical Europe GmbH.**, *Hamburg, Germany*, Working Student
August 2020–May 2021	**Home Power Solutions GmbH.**, *Berlin, Germany*, Working Student, Adapting a Model Predictive Controller for an Energy Storage System to Weather Condition
May–August 2020	**Home Power Solutions GmbH.**, *Berlin, Germany*, Summer internship, Developing an IOT Solution for measuring the Room Air Quality

Skills

Programming Languages

Excellent Knowledge	*Python, Matlab, Rust, C*
Good Knowledge	*C++, C#, TypeScript, JavaScript, Java*
Basic Knowledge	*Common Lisp, Haskell, OCaml*

Other Computer Skills

Robotics	ROS, ROS2
Embedded Systems	Arduino, ESP32, Raspberry Pi, PlatformIO
Operating Systems	MS Windows, GNU/Linux, Bash, PowerShell, Microsoft Active Directory
Typesetting	LaTeX, Markdown, Toff, Roff, Vim, Emacs
Databases	MySQL
Networking	DNS, TCP sockets, UDP sockets, Reverse Proxy
CAD	SolidWorks, Adobe AutoCAD
Programming Paradigms	Object-Oriented Programming, Functional Programming, Imperative Programming
Microsoft Office	Word, Excel, PowerPoint, Visio, Access, Project

Languages

Arabic, English	Mother tongue, Fluent
German	Upper-Intermediate
French	Beginner

Interests

Programming	Advent of Code 2022 in C Dynamic Models Library in Rust
Cycling	1960s LaPierre Racing bicycle owner
Football	Weekend football Game

Ali Elwnegy
Hamburg, July 7, 2023