Gianmarco Ricci

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WORK EXPERIENCE

01/10/2020 – 31/03/2021 – Meyrin, Switzerland
TRAINEE STUDENT – CERN

The Large Hadron Collider (LHC) is the world's largest and most powerful particle accelerator. Inside the accelerator, two high-energy particle beams travel at close to the speed of light before they are made to collide. If even a small fraction of the circulating particles deviates from the precisely set trajectory, it can quench a super-conducting LHC magnet or even destroy parts of the accelerator. This is why is needed a collimation system, made up of around 100 collimators. The aim of my work at CERN was to analyze and visualize all aspect underlying the collimators automatic alignment based on Machine Learning, to look into unexplored connection within the data, to determine the possibility of speeding up the automatic collimators alignment and propose a new Machine Learning model that could accomplish this goal.

EDUCATION AND TRAINING

21/10/2018 – 31/03/2021 – Roma, Italy
MASTER DEGREE IN ELECTRONIC ENGINEERING - DESIGN OF DIGITAL ELECTRONIC SYSTEMS AND MACHINE LEARNING – Sapienza University of Rome

Thesis
Title: Long Short-Term Memory (LSTM) Recurrent Neural Network for the Fully-Automatic Collimator Beam-Based Alignment in the Large Hadron Collider (LHC)
Dissertation/thesis subject: Machine Learning
Thesis supervisor: Mostacci Andrea
Age at graduation: 25 | Official duration: 2 years
Final degree mark: 107/110
Graduation date: 31/03/2021

Field(s) of study
  ○ Engineering, manufacturing and construction : *Electronics and automation*

01/09/2014 – 20/10/2018 – Latina, Italy
BACHELOR DEGREE IN ELECTRONIC ENGINEERING – Sapienza University of Rome

Thesis
Title: Project of a capacitance meter for nanorobotics applications
Dissertation/thesis subject: Automatic fundamentals
Thesis supervisor: Di Giamberardino Paolo
Age at graduation: 23 | Official duration: 3 years
Final degree mark: 91/110
Graduation date: 25/10/2018

LANGUAGE SKILLS

Mother tongue(s): ITALIAN

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	B2	B2	B2

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

DIGITAL SKILLS

Programming Languages

C │ C++ │ MATLAB&Simulink │ Python

Engineering Software

GNUMake │ AWR Microwave Office │ Git │ Mentor Modelsim / Questasim

Lab Equipment

Use of Lab equipment including VNA, Oscilloscopes, Multimeters, DC power supplies etc │ PIC Microcontroller │ Arduino

PROJECTS

01/03/2020 – 10/04/2020
Evaluation of fuel consumption with Long short-term memory (LSTM) network

In this project a model for evaluation of fuel consumption of a rocket engine have been designed. The model used have been a LSTM network that is an artificial recurrent neural network (RNN) architecture used in the field of deep learning. The datased used contained a time series of mixtures of fuel and air. The result showed good prediction values.

01/05/2019 – 15/05/2019
Design of an edge detector

In this project an edge detector have been designed. Given an image in black and white memorized in form of matrix of pixels (each one represented with an integer number that expresses the level of grey), the operation of edge detection leaded to a generation of a new image containing only the edges of the starting image. Starting from an algorithm written in C the Algorithmic State Machine Diagram and the VHDL code of the edge detector have been designed.

01/04/2020 – 01/07/2020
PIC18F4550

In this project I designed two circuits for the control of a servo and stepper motor with the use of the **PIC18F4550** microcontroller. The first one is able to vary the position of the servo motor using two buttons and to print the position of the motor shaft on a LCD 16x2. The second one is able to control the rotation velocity and direction of a stepper motor using two buttons and to print on the display informations about this two parameters.