EUROPEAN CURRICULUM VITAE FORMAT

PERSONAL INFORMATION

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Nationality	**ITALIAN**
Birth Date	**01/02/1995**

PROFESSIONAL SECTOR

COMPUTER SCIENCE ENGINEERING

WORK EXPERIENCE

• 05/2020 – 07/2020	**PULMONARY EMBOLISM AND INFECTIONS DETECTION IN COVID-19 AFFECTED PATIENTS USING DEEP NEURAL NETWORKS**
• Employer Name and Location	Supervisors: Prof. Eng. Andrea Guerriero, Prof. Eng. Vitoantonio Bevilacqua
• Company type	Polytechnic University of Bari
• Aim	Deep Neural Network U-Net based approach, to segment lung lobes on CT slices; infection's detection (determined by the appearance of consolidation and ground glass opacities) by Inf-Net neural network in Covid-19 affected patients. Subsequent feature extraction and PCA application on results previously reached.
• 04/2020 – 06/2020	**FOCUS ON THE BLOCKCHAIN: ARCHITECTURE, SECURITY, PRIVACY, APPLICATIONS**
• Employer Name and Location	Supervisor: Prof. Eng. Giuseppe Mastronardi
• Company type	Polytechnic University of Bari
• Aim	Deep analysis of blockchain technology, focusing on security aspects, GDPR constraints, user rights, and multiple applications on finance, healthcare, forensics, etc.
• 12/2019 – 04/2020	**C2PYTHON TRANSCOMPILER**
• Employer Name and Location	Supervisor: Prof. Eng. Floriano Scioscia
• Company type	Polytechnic Universzity of Bari
• Link	https://github.com/Sergio05Rule/FL-C
• Aim	C2Python Transcompiler able to translate simple C programs in Python target language, given a set of grammar restrictions on source language. The lexical analyser has been created using Flex (scanner generator), where regular expression were used to describe the token patterns. The syntax analyser was generated using Bison (the parser generator): it builds the parse tree using a bottom-up approach. The sub-C language syntax was developed from scratch

The semantic analysis phases uses the 'syntax-directed' approach and builds the intermediate representation: an Abstract Syntax Tree(AST).

The interpretation phase uses the generated intermediate representation to execute the C instructions.

It follows the translation phase, based on the intermediate representation created: starting from restrictions imposed on C language, each construct has been translated into Python language with respect to grammar rules, both C and Python language

• 12/2019 – 04/2020
• Employer Name and Location
• Company type
• Link
• Aim

ARTIFICIAL INTELLIGENCE CHALLENGES

Supervisor: Prof. Eng. Tommaso Di Noia

Polytechnic University of Bari

https://github.com/kur0bi/Artificial-Intelligence-Challenges

Focus on the Artificial Intelligence course challenges, solved by the students of the Artificial Intelligence and Machine Learning course at 'Politecnico Di Bari'.

The aim of these challenges is to test both theoretical knowledge and coding skills about Artificial Intelligence topics covered in the lessons. The students had 2 hours and half for each challenge to implement a solution using Artificial Intelligence principles and algorithms.

The topics covered by these challenges are:

SEARCH STRATEGIES: uninformed search and informed search.

Uninformed search using breadth-first search, uniform-cost search, depth-first search, depth-limited search, iterative deepening depth-first search, bidirectional search.

Informed search using greedy best-first search, A* search.

CONSTRAINT SATISFACTION PROBLEMS: backtracking strategy and local search strategies based on Minimum Remaining Values heuristic, Degree heuristic, Least Constraint Value heuristic, Forward Checking strategy and Arc Consistency strategy.

ADVERSARIAL SEARCH: minimax algorithm, alfa-beta pruning technique, search cutting.

PROLOG PROBLEM MODELING: backtracking search strategy to resolve a Constraint Satisfaction Problem.

Each challenge is briefly described below:

- LOCAL SEARCH: a maze composed by a rectangular grid having specific positions occupied by walls. Find the shortest path implementing 3 different search strategies: Breadth First, Depth First, A*.

- CSP: a constraint satisfaction problem solved implementing Backtracking-Search algorithm and Local Search .The problem to solve is to distribute items in different containers not overcoming the maximum capacity, within the constraints imposed by the problem itself.

- MINIMAX: two opposed agents moving on a 2D board. Giving a define set of rules, use minimax algorithm, implementing alpha-beta pruning to the search tree.

- PROLOG: showing all the possible solutions for the escape of few individuals, from a place covered with traps using Prolog.

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• 12/2019 – 04/2020

MACHINE LEARNING CHALLENGES

• Employer Name and Location

Supervisor: Prof. Eng. Tommaso Di Noia

Polytechnic University of Bari

• Company type

• Link

https://github.com/kur0bi/Machine-Learning-Challenges

• Aim

Focus on the Machine Learning course challenges solved by the students of the Artificial Intelligence and Machine Learning course at 'Politecnico Di Bari'.

The aim of these challenges is to test both the theoretical knowledge and coding skills about the Machine Learning topics covered in the lessons. The students had 2 hours and half for each challenge to implement a solution using Machine Learning principles and algorithms.

The topics covered by these challenges are:

GRADIENT DESCENT algorithm for univariate linear regression, multivariate linear regression, polynomial regression, logistic regression.

DATA PREPROCESSING: Min-max and Z-score normalization, feature selection, removing outliers.

CROSS VALIDATION: hold-out method, K-folds method, random subsampling.

MODEL EVALUATION: learning curves, metrics, ROC curve.

NEURAL NETWORKS and Support Vector Machines.

UNSUPERVISED LEARNING: K-Means, K-Medoids, GMM, Hierarchical clustering, DBSCAN.

DIMENSIONALITY REDUCTION: PCA and Kernel PCA

Each challenge is briefly described below:

- BOOK PRICE PREDICTION: exploit data about sale books to train a Machine Learning model capable of predicting the price of a book, starting from the available information about it.

- IMAGES CLUSTERING AND CLASSIFICATION: classify 28x28 grayscale images.

Apply dimensionality reduction using PCA, divide the dataset in 10 subsets using clustering algorithms, computer the ideal number of clusters using Elbow method and compute Silhouette Coefficient applied to each clustering method used.

- LOGISTIC REGRESSION: predict an object unknown feature, based on other features and a training dataset.

Apply min-max and/or Z-score normalization, build a multiclass logistic regression model with L2 regularization using full-batch Gradient Descent.

- NEURAL NETWORK LOGISTIC REGRESSION: predict an object unknown feature, based on other features and a training dataset using a Neural Network coded by scratch. Apply Z-score normalization.

• 10/2019 – 02/2020

WEAR2PAY: ANDROID APPLICATION FOCUSED ON VENDOR MACHINE-USER INTERACTION

• Employer Name and Location

Supervisors: Prof. Eng. Marina Mongiello, Sitael Spa

Polytechnic University of Bari

• Company type

• Link

https://github.com/azzollinigianluca95/Wear2Pay

• Aim

Android Mobile Smartwatch application developed in Java programming language. The aim is to connect a vendor machine simulated by a specific mobile application (on an Android smartphone), to a wearOS smartwatch, developing a smartwatch application called Wear2Pay. The connection is established by Bluetooth module.

The user will be able to log into Wear2Pay system leveraging Internet connection, check if there is sufficient credit, and then be able to buy one of the different available products on the vendor machine, directly from smartwatch.

• 05/2019 – 07/2019	**CATCH THE MOLE**
• Employer Name and Location	Supervisor: Prof. Eng. Francesco De Leonardis
• Company type	Polytechnic University of Bari
• Link	https://github.com/azzollinigianluca95/Catch-the-mole-A-VHDL-project-for-a-FPGA-board
• Aim	Simulation of the famous game 'Catch The Mole' on a FPGA board (Altera Cyclone V) using VHDL. The project has been designed building different functional blocks with specific purposes and relative interactions. The hardware description has been made using VHDL language by Intel Quartus Prime software. The simulation of system interactions was made by ModelSim simulator, and then the implementation has been done interfacing the simulator one, with Altera board. The system controls 4 leds associated to 4 different possibile states of the mole: when the mole is on the specific spot, the led changes itself. Four buttons are associated to the four leds: the system checks if the right button is pressed respect to the mole position. The 7-segment displays shows the user time left, to hit the right button and the number of mole hit so far.
• 12/2018 – 02/2019	**VR-ROOM WEB APPLICATION USING A-FRAME**
• Employer Name and Location	Supervisors: Prof. Eng. Saverio Mescolo, Eng. Vittorio Palmisano
• Company type	Polytechnic University of Bari
• Link	https://github.com/azzollinigianluca95/VR-ROOM-web-application-using-a-frame
• Aim	Simulation of VR Tridimensional Living Room, based on A-Frame open-source framework.
• 12/2018 – 02/2019	**WORD EMBEDDING APPLIED ON LITERARY WORKS**
• Employer Name and Location	Supervisor: Prof. Eng. Simona Colucci
• Company type	Polytechnic University of Bari
• Link	https://github.com/azzollinigianluca95/Word-Embedding-applied-on-literary-works
• Aim	Given a word, detect all other words having similar meaning in a given literary work, using Word2Vec algorithm and Apache Spark enviroment. The analyzer takes in input literary works as text files, grouped by their literary period and applies preprocessing removing useless spaces and step-words. Then, given a word in input, it finds other words with similar meaning for each literary period. There's no limit of works which can be loaded for each period. In output the best results for each period are shown, making possible to compare how the same word can change its meaning during different literary periods. The system was implemented on a simulated distributed system using Apache Spark. The similarity word search is implemented using the word embedding technique known as 'word vector'. Then a 'Word2Vec' algorithm with a 'SkipGram' model computes the similarity factors. At the end, words are sorted respect to their similarity factor. The exploited model is included in the Mlib library of the Apache Spark framework.

• 10/2018 – 02/2019	**SMART DELIVERY BOX: AUTOMATIC DELIVERING OF PACKAGES**
• Employer Name and Location	Supervisors: Prof. Eng. Alfredo Grieco, Eng. Pietro Boccadoro
• Company type	Polytechnic University of Bari
• Link	https://github.com/azzollinigianluca95/Smart-Delivery-Box
• Aim	Creation of a prototype of a Delivery Box, able to open itself automatically, showing QR code uniquely generated. When the parcel has been delivered, the box automatically closes itself, sending a Telegram message to the Box owner, showing infos about date and time delivery. In case of tampering the user will be alerted, receiving a message on his smartphone. The system is self-sustaining thanks to solar panels giving energy to a battery, used to power the system core, the Raspberry Pi.
• 1/2018 – 04/2018	**FORMAL FRAMEWORK MODELING TO SUPPORT ARCHITECTURAL SOFTWARE DESIGN FOR IOT – BACHELOR'S DEGREE IN SOFTWARE ENGINEERING**
• Employer Name and Location	Supervisors: Prof. Eng. Marina Mongiello, Eng. Francesco Nocera
• Company type	Polytechnic University of Bari
• Aim	Extension of support decisional system, making architectural process modelling easier. The analysis has been extended to Middleware-Induced architecture in IoT. The approach is based on knowledge modelling, in fuzzy ontologies.

EDUCATION AND TRAINING

• 07/2013	**HIGH SCHOOL DEGREE**
• Organisation providing education and training	Liceo Scientifico "A.Einstein" – Molfetta (BA) - Italy
•Final grade	90/100
• 12/07/2014	**10 YEARS PIANO DEGREE**
• Organisation providing education and training	Conservatorio "N.Piccinni" – Bari (BA) - Italy
•Final grade	10/10 cum laude
• 20/10/2017	**MASTER DEGREE AS PIANO SOLOIST**
• Organisation providing education and training	Conservatorio "T.Schipa" – Lecce (LE) - Italy
• Final grade	110/110 cum laude
• 20/10/2017	**BACHELOR'S DEGREE IN COMPUTER SCIENCE**
• Organisation providing education and training	Polytechnic of Bari – Bari (BA) - Italy
• Ongoing studies	**MASTER DEGREE IN COMPUTER SCIENCE – INFORMATION SYSTEMS**
• Organisation providing education and training	Polytechnic of Bari – Bari (BA) - Italy
• Current grade point average	28.8/30 (one exam to the end)

RELATIONAL SKILLS AND COMPETENCES

Attitude to interpersonal relationships and teamwork. Availability for travel.

IT, TECHNICAL SKILLS AND COMPETENCIES	• **Operative Systems** knowledge: Linux, MacOS, Windows, AndroidOS, WearOS • **Programming languages**: C, Java, Python, VHDL, JavaScript, Prolog, SQL, SPARQL • CSS, XML, HTML, PHP knowledge • **Microsoft Office** Software: Access, Excel, PowerPoint, Word • **Data preparation and data mining** capabilities • **Big Data Architectures** knowledge: Hive, Apache Spark, Apache Hadoop, Python • **Agile** Methodology knowledge • **Business Models** knowledge • **A-Frame** knowledge • Deep knowledge of the most important **algorithms of Classic Artificial Intelligence**: and corresponding implementation in Python language • Deep knowledge of **Machine Learning key concepts** • **Medical Image Processing** knowledge: able to work on DICOM images, able to work with Itk-Snap Software, able to extract image features by Pyradiomics Python library
PERSONAL SKILLS AND COMPETENCIES	
Native Language	**ITALIAN**
Other Language	**ENGLISH**: excellent abilities in reading, writing, listening, speaking. Working proficiency
DRIVING LICENCE	Italian driving licence (category type B)

Date: _____01/08/2020_____

Signature: _____