Sveva Pepe

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WORK EXPERIENCE

Work Student

Realtime Technologies Ltd [07/2016 – 08/2016]

City: Dublin

Country: Ireland

Testing electonic hardware in the form of Class 2DSEP printed circuit bords and electro-mechanical systems to ensure their functional compliance for biomedical industry.

Testing involves validation, verification and regression testing of the electronic hardware prior to the initial field trail of prototypes and subsequent production release of both new and existing biomedical products.

Assembling the electronic hardware into biomedical sensing devices for use in galvanic response, electromyography, electrocardiogram ad strain gauge amplifying.

Programming test software to instruct and control the running of the test procedure for the comparison of actual to predicted results using code-drievn testing.

Monitoring test data and corresponding two dimensional electrical signal profiles of the electronic hardware operating under test using graphical user interface testing.

Scholarships For Research Activities

Sapienza Università di Roma [11/2020 – 06/2021]

City: Rome

Country: Italy

The L3DAS project (Learning 3D Audio Sources) aims at encouraging and fostering research on the afore-mentioned topics. We build L3DAS dataset that contains multiple-source and multiple-perspective B-format Ambisonics audio recordings. The acoustic field is sampled of a large office room, placing two first-order Ambisonics microphones in the center of the room and moving a speaker reproducing the analytic signal in 252 fixed spatial positions. Relying on the collected Ambisonics impulse responses (IRs), existing clean monophonic datasets is augmented to obtain synthetic tridimensional sound sources by convolving the original sounds with our IRs. Clean files have been extracted from the Librispeech and FSD50K datasets. Then in particular, we analize two different tasks: 3D Speech Enhancement and 3D Sound Source Localization and Detection. In the first, the objective is the enhancement of speech signals immersed in a noisy 3D environment, instead, in the second, the aim is to detect the temporal activities of a known set of sound event classes and to further locate them in the space, in particular, focusing on the sound event localization and detection (SELD).

EDUCATION AND TRAINING

B.Sc. Computer and System Engineering

Sapienza University of Rome [09/2016 – 07/2019]

Field(s) of study: Computer and System Engineering

Final grade : 110 cum laude

M.Sc. Artificial Intelligence and Robotics

Sapienza University of Rome [09/2019 – Current]

Field(s) of study: Artificial Intelligence and Robotics

LANGUAGE SKILLS

Mother tongue(s):

Italian

Other language(s):

English

LISTENING B1 **READING** B1 **WRITING** B1

SPOKEN PRODUCTION B1 **SPOKEN INTERACTION** B1

DIGITAL SKILLS

Power Point / Python / Java / C / Linux / MySQL / JSON / JavaScript / HTML / PHP / Github / Machine Learning / Tensorflow / LaTeX / Keras / Numpy / Scikit-Learn / Matplotlib / Anaconda / PyTorch / Artificial Intelligence / Computer Vision / Jupyter Notebook / Natural Language Processing

PROJECTS

Optimal Trajectory Generation in the Duckietown Environment

[01/2021 – 06/2021]

The goal of the project is to implement trajectory generation scheme, the approach consists in reducing the search space by considering the optimization of specific cost functions which yield polynomial trajectories, coupled with a feedback linearization control, to navigate in the Duckietown environment, which consists in a simulator providing customizable city-like scenarios with lanes and intersections. In this setting, the vehicle is controlled using information provided by the monocular camera on top of the vehicle, which is responsible for recognizing the center lane which defines the local Frenet frame. The simulations are in the Duckietown simulator (based on OpenAI Gym) using Python.

https://github.com/pepes97/Optimal-trajectory-generation-in-the-Duckietown-environment

Motorcycle Racing Ontology

[01/2021 – 02/2021]

An ontology on the domain of grand prix motorcycle racing. I have chosen this domain because, currently, information on it is very scarce and fragmented. The project was developed from scratch using Protégé.

https://github.com/pepes97/Grand-Prix-Motorcycle-Racing-Ontology

Classification of American Sign Language

[06/2020 – 07/2020]

Design a classifier that, given an image, is able to understand and recognize American Sign Language (ASL) and produce the right character represented by the sign, using machine learning techniques and libraries.

https://github.com/pepes97/ASL

Semantic Role Labeling

[06/2020 – 07/2020]

Semantic Role Labeling is a fundamental NLPtask, which has the goal of finding semantic roles for each predicate in a sentence.

The goal of the SRL is to extract predicate-argument structure of a sentence, identifying ”who did what to whom”, ”when”, ”where” etc.For example, consider this sentence:The cat eats a fish.Eats is the verb,The cat is the subject and a fish is the object complement. We are not interested in the meaning of ”cat” or ”fish”, but we want to identify and classify them, i.e, associate each argument with its corresponding role.To solve this task, LSTM-based models in different configurations were used in this paper, including pre-trained word embeddings, contextualized word embedding from BERT and Graph Convolutional Network. Furthermore, the subtask of disambiguation of predicates is also taken into consideration, because every often the datasets that are provided have information on the predicates present in the sentences,but not the clarification of the meaning of them.

https://github.com/pepes97/SRL

Deep Quaternion Neural Network for 3D Sound Source Localization and Detection

[02/2020 – 04/2020]

Sound source localization is a fundamental task, especially in revembrant and multiple sources environments; it includes recognizing the temporal onset and offset of sound events when active, classifying the sound events into known set of classes, and further localizing the events in space when active using their direction of arrival (DOA).

In this project, we work with 3D audio sounds captured by first-order Ambisonic microphone and these sounds are then represented by spherical harmonics decomposition in the quaternion domain.

The aim of the project is to detect the temporal activities of a known set of sound event classes and to further locate them in the space using quaternion-valued data processing, in particular, we focus on the sound event localization and detection (SELD).

In order to do this, we use a given Quaternion Convolutional Neural Network with the addition of some recurrent layers (QCRNN) for the joint 3D sound event localization and detection task.

https://github.com/pepes97/DQNN

Named Entity Recognition

[03/2020 – 04/2020]

Named Entity Recognition (NER) is a process of identifying and recognizing entities through text.

The goal of the project is to create a model that is able to find an entity from the raw data and can determine the category to which the element belongs. There are four categories: names of people, organizations, places and more. Identified by the labels PER, ORG, LOC, and O respectively.

https://github.com/pepes97/NER