Víctor Massagué Respall

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EDUCATION

POLYTECHNIC UNIVERSITY OF CATALONIA | Undergraduate in Computer Science - Computing Specialization
Sept. 2014 - Jun. 2018 | Barcelona, Spain

INNOPOLIS UNIVERSITY | Exchange Program - Undergraduate in Computer Science
Aug. 2017 - Jun. 2018 | Innopolis, Russia

INNOPOLIS UNIVERSITY | Master in Robotics
Aug. 2018 - Expected June 2020 | Innopolis, Russia

PUBLICATIONS

MONTE CARLO TREE SEARCH FOR QUORIDOR

September 2018 | Conference: GAME ON 2018 • Dundee, Scotland
This paper presents a preliminary study using Monte Carlo Tree Search (MCTS) upon the board game of Quoridor. Quoridor is an interesting game for expansion of player agents in MCTS due to having a mechanically simple rule set, however, Quoridor has a state-space complexity similar to Chess with a higher game-tree complexity. The system is shown to perform well against current existing methods, defeating a set of player agents drawn from an existing digital implementation as well as a previous method using a Genetic Algorithm (GA).

IMPLEMENTATION OF AUTONOMOUS VISUAL DETECTION, TRACKING AND LANDING FOR AR.DRONE 2.0 QUADCOPTER

August 2019 | Conference: DeSE2019 • Kazan, Russia
This paper presents the design and implementation of a system where an autonomous aerial vehicle (UAV) has to detect, track and land in the vicinity of a moving Unmanned Ground Vehicle (UGV). The quadcopter needs to identify and track the target using camera-based perception. A color-based detection algorithm is employed to detect the UGV position and Kernelized Correlation Filters (KCF) are taken for its tracking, to double check the UGV presence in an image frame, the ORB (Oriented FAST and rotated BRIEF) feature detector is used (suppressing the false positive cases). Then the UGV position detected in the image frame is used in a PD feedback control loop in the quadcopter's controller that enables the actual tracking of the moving UGV in the horizontal plane, while another PID controller stabilizes the UAV altitude. The proposed approach was initially tested in Gazebo simulator, and then in real environment with Parrot AR.Drone 2.0 and Plato robots (as UAV and UGV correspondingly). The results demonstrate that the proposed system can detect and track the UGV in real time mode without artificial markers and provide robust UAV landing.

EXPERIENCE

RESEARCH INTERNSHIP AT INNOPOLIS UNIVERSITY | Research on UAV-based exploration of unknown terrain at the Autonomous Transport Systems Lab
June 2019 – July 2019 | Innopolis University, Russia
During the internship, a complete algorithm based on Next-Best-View planner was developed to explore, using the drone DJI M100, a bounded unknown area equipped with Velodyne LIDAR to build a 3D map online of the environment.

PROJECTS

HOME AUTOMATION MODEL | An intelligent home model with Arduino
May 2013 – Dec 2013 | Capellades, Spain
It consists in a model of 80x50cm of a house, applying different automatons for instance sensors for the lights of the garden when it is getting dark or an automated garage door when a car gets closer. The whole project is composed of two Arduino cells.

DOCUMENT SIMILARITY | Project to detect similarity between documents
Sept 2016 – Dec 2016 | Barcelona, Spain
Detecting similarity between documents using hashing (Jaccard Similarity, Minhash Similarity and LSH Similarity). The project has been done with C++.

ROBOLANG | Parser for a robot programing language
Feb 2017 - June 2017 | Barcelona, Spain

Worked with two colleagues developing a parser for a robot and an implementation of a simulator to test it. We were provided with a NXT Lego Mindstorm. The project was done with Java and ANTLR3.

STANCE DETECTION IN CATALAN AND SPANISH TWEETS | Simple technique for stance detection using Independence of Catalonia tweets

Nov 2017 | Innopolis, Russia

Stance is given an ongoing interaction, the way speakers place themselves in it. It is described a simple technique for stance detection using Independence of Catalonia tweets. It is used word2vec word embedding features for this detection. The system had produce a best result for Spanish tweets as compare to other participants in IberEval 2017.

UAV-BASED EXPLORATION OF ROUGH TERRAIN | Master Thesis

Currently in development| Innopolis, Russia

Complete drone system with automatically takeoff and landing feature and autonomous path planning for exploration of unknown environment online.

SCHOLARSHIP/AWARDS

FULL SCHOLARSHIP FOR GRADUATE STUDIES | Innopolis University

Aug 2018 - Jun 2020 | Innopolis, Russia

SKILLS

PROGRAMMING

Over 5000 lines:
Python • C++ • Matlab • LaTeX
Over 1000 lines:
Java • ROS
Familiar:
MIPS • C • Android • Arduino
Prolog • Haskell

SPOKEN & WRITTEN

Native:
Catalan, Spanish
Advanced:
English

LINKS

Personal Website which contains detailed information of my professional career
Research Gate / **Google Scholar** which contains my publications and current research projects
Github which contains open-source codes of some of my projects