Veille NAE 23 mars 2018

Funneled Bayesian Optimization for Design, Tuning and Control of Autonomous Systems

09/03/2018 - ieeexplore.ieee.org

In this paper, we tackle several problems that appear in robotics and autonomous systems: algorithm tuning, automatic control, and intelligent design. All those problems share in common that they can be mapped to global optimization problems where evaluations are expensive. Bayesian optimization (BO) has become a fundamental global optimization algorithm in many problems where sample efficiency is of paramount importance. BO uses a probabilistic surrogate model to learn the response function and

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Input Uncertainty Sensitivity Enhanced Non-Singleton Fuzzy Logic Controllers for Long-Term Navigation of Quadrotor UAVs

01/03/2018 - ieeexplore.ieee.org

Input uncertainty, e.g. noise on the on-board camera and inertial measurement unit, in vision-based control of unmanned aerial vehicles (UAVs) is an inevitable problem. In order to handle input uncertainties as well as further analyze the interaction between the input and the antecedent fuzzy sets (FSs) of non-singleton fuzzy logic controllers (NSFLCs), an input uncertainty sensitivity enhanced NSFLC has been developed in robot operating system (ROS) using the C++ programming language. Based on

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DRONE AIR TRAFFIC CONTROL AND FLIGHT PLAN MANAGEMENT

22/02/2018 - worldwide.espacenet.com

One embodiment provides a method comprising receiving a flight plan request for a drone. The flight plan request comprises a drone identity, departure information, and arrival information. The method further comprises constructing a modified flight plan for the drone based on the flight plan request, wherein the modified flight plan represents an approved, congestion reducing, and executable flight plan for the drone, and the modified flight plan comprises a sequence of four-dimensional (4D) cells representing a planned flight path for the drone. For each 4D cell of the modified flight plan, the method further comprises attempting to place an exclusive lock on behalf of the drone on the 4D cell, and in response to a failure to place the exclusive lock on behalf of the drone on the 4D cell, rerouting the modified flight plan around the 4D cell to a random neighboring 4D cell.

Lire la suite

Machine-Learning Identification of Airborne UAV-UEs Based on LTE Radio Measurements

21/02/2018 - forskningsdatabasen.dk

? Machine-Learning Identification of Airborne UAV-UEs Based on LTE Radio Measurements ? For the collected data results show reliability close to 99% in most cases and also discuss how waiting for the final decision can even improve this accuracy to values close to 100 ?

Lire la suite

The development of an autonomous navigation system with optimal

control of an UAV in partly unknown indoor environment

09/02/2018 - sciencedirect.com

Abstract This paper presents an autonomous methodology for a low-cost commercial AR. Drone 2.0 in partly unknown indoor flight using only on-board visual and internal sensing. Novelty lies in:(i) the development of a position-estimation method using

Lire la suite

Autonomous position control of multi-unmanned aerial vehicle network designed for long range wireless data transmission

05/02/2018 - ieeexplore.ieee.org

In recent decade, potential application of Unmanned Aerial Vehicles (UAV) has enabled replacement of various operations in hard-to-access areas, such as: inspection, surveillance or search and rescue application in challenging environments. One of the major challenge in this area is the limited range of wireless data transmission within legally allowable frequency and transmission power. This research presents the concept development of the multi-UAV system responsible for long range wireless tr

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DRONE CONTROL DEVICE USING COMPOSITE SENSOR AND METHOD THEREFOR

25/01/2018 - worldwide.espacenet.com

The present invention relates to a drone control device using a composite sensor and a method therefor. A method for controlling a drone by using a drone control device, according to the present invention, comprises the steps of: receiving the input of a control mode for a flight operation of a drone; receiving a sensing signal of an obstacle sensed by a plurality of composite sensors attached to the front surface, the left surface, the right surface, the top surface, and the bottom surface of the drone, respectively, while the drone flies according to the control mode; calculating the distance between the obstacle and the drone by using the sensing signal; and controlling the flight of the drone by using the calculated distance and a plurality of preset distance section ranges. Thus, according to the present invention, the stability of the flight of the drone can be greatly improved since obstacles located on a flight path of the drone are automatically detected and avoided. Also, it is possible for users inexperienced in controlling drones to safely control the flight of the drone since takeoff and landing flight can be automatically controlled.

Lire la suite

Control fligth of a UAV type tricopter with fuzzy logic controller

25/12/2017 - ieeexplore.ieee.org

The article is devoted to the movement study of the unmanned aerial vehicle, type tricopter, with three controllable drives, all the propellers of which are rotary. The UAV is equipped with swept wings that allow it to provide aerodynamic stability. During take-off and landing the rotors work as lifting rotors, and while moving in the horizontal plane they work as the traction ones, shifting the plane of rotation by turning the rotary propellers. For the study of convertiplane basic flight modes

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