

RoboCup In-Game Gesture Recognition

Introduction

RoboCup is an annual international robotics competition founded in 1996 to promote robotics and artificial intelligence research. The main focus of RoboCup is the soccer game between autonomous robots. Among the five different leagues, RoboCup Standard Platform League (SPL) is for standard humanoid robots called Nao from Softbank Robotics. Besides the main league, RoboCup SPL also hosts minor leagues called technical challenges. The objective of the technical challenges is to solve specific technical problems regarding the gameplay within the league.

This project aims to tackle the In-Game Visual Referee 2023 challenge. Your tasks are the development and fine-tuning of computer vision algorithms to recognize (i) static hand signals with one hand, (ii) static hand signals with two hands, and (iii) dynamic hand signals with one or two hands. More details are available in RoboCup SPL Technical Challenges 2023: <https://spl.robocup.org/wp-content/uploads/SPL-Challenges-2023.pdf>.



Expected Workload

- 15% Literature survey
- 25% Dataset creation (simple and complex body poses)
- 50% Computer vision algorithm development and fine-tuning
- 10% Report and documentation writing

Requirements / Knowledge in...

- Practical experience with Python and/or C++
- Knowledge of machine learning frameworks such as Keras and PyTorch
- Knowledge of computer vision is a plus
- Basic knowledge of git and GitHub

Thesis Type

The workload will be discussed and adapted to Bachelor, Semester, and Master theses

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