

Research Interest August 31

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My research interest is image processing and machine learning to solve real world problems.

My first project is vision-based obstacle detection and pathfinding algorithms for a mobile robot using support vector machine (SVM) and A* algorithms. The used methods are applied for navigation of NAO humanoid robot. The camera which is located on NAO robot is used to capture the images of the world map. The captured image is processed and classified into two classes; an area with obstacles and area without obstacles. For classification of images, Support Vector Machine (SVM) is used. After classification, the map of the world is obtained as an area with obstacles and area without obstacles. This map is input for path finding algorithm. A* path finding algorithm is used to find the path from the start point to the goal. The considered algorithms are implemented for the guidance of NAO robot. The used algorithms allow to detect obstacles and find the near-optimal path.

My second project is drowsiness detection. First, a camera setup in a car that monitors a stream for faces: if a face is found, facial landmark detection applied and extract the eye regions. From this eye regions eye aspect ratio computed. Dataset is created by using these aspect ratios into two classes; open and close. For classification, SVM is used. If result is close, it means that driver is sleeping or something bad happened. In this case alarm rings.

In my third project, I am working on advanced driver assistance systems (ADAS) in GUNSEL Electric Car Project. Such as detecting people and obstacle on the road, traffic signs and etc.