

Holistic Scene Understanding for Indoor/Outdoor Navigation

Supervisors

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Presentation of the project

With the growing aging population, the number of seniors with dementia (SD) will greatly increase in the coming years. Holistic scene understanding technique can greatly help SD in daily life scenario – outdoor and indoor navigation. As a fundamental problem of computer vision, the developed holistic scene understanding technique can also generalize to other applications, such as auto-vehicle, medical and satellite imagery. In this project, we are interested in understanding scenes and reasoning about objects/events spatially and temporally using monocular image sequences, mobile depth sensor and state-of-the-art machine learning techniques, with focus on SD navigation assistance for the “last mile navigation” which typically happens indoors.

Expected deliverables

The goal of this project is to develop state-of-the-art 2D/3D scene understanding techniques with effective semantic representation and efficient inference methods based on probabilistic graphical model that reasons about the scene geometry, object localization and assign semantic class/attribute labels to objects under verbal guidance. Besides publication of the conducted research in reputable conferences and journals, the candidate is expected to develop a demonstrable software prototype.

Keywords

Holistic Scene Understanding, Indoor Navigation, Ambient Assisted Living.

Applicant profile

- Master Degree or Engineer Student (last year of studies).
- Knowledge/experience in image processing and computer vision
- Strong motivation towards this challenging project.
- Open to work with both French and Singaporean scientists.
- Availability for 5 to 6 months starting in the first semester of 2016.