

ASSISTANCE FOR BETTER MOBILITY AND IMPROVED COGNITION OF ELDERLY BLIND AND VISUALLY IMPAIRED



CONTEXT

People that have an impaired visual cognitive system face problems with an overall contextual understanding of space semantics, interaction with surrounding objects and have serious difficulties with planning, orientation, communication and navigational skills.

- *285 million visually impaired people all over the world (among which 39 million blind)*
- *In Europe: 28 million visually impaired and 2 million blind. The degree of visual impairment is increasing with an ageing population*

ALICE APPROACH

Develop using publically available and affordable technology a hardware platform that includes a smart phone and laptop. Exploit all available mobile sensors (camera, GPS, audio) to perform analysis and provide feedback (alerts, positioning information) in an appropriate, non-invasive and enactive manner. The system will include technologies for vision-based, real-time interpretation of the captured scenes, landmark recognition, annotated accessible maps as well as visually impaired-adapted human machine interfaces.

Involve the end users in the development of the ALICE navigational assistant throughout the lifetime of the project, starting from requirements/use case specification and up to real life performance testing, evaluation and validation.

OBJECTIVE

The objective is to improve the quality of life of ageing people with impaired vision by providing a navigational assistant with cognitive abilities, integrated in light mobile devices (smart phones, tablets and laptops). The navigational assistant will be able to offer visually impaired users a cognitive description based on a fusion of perceptions gathered from a range of sensors, including image/video, GPS, audio and mobile-related.

Canes and dogs are still today the most reliable blind assistants. The acceptance of new technologies is conditioned by performance/reliability factors as well as by the respect of the user needs and practices.

ALICE TECHNOLOGIES

The ALICE project combines research developments in cognitive sciences, psychology, computer vision, artificial intelligence and robot navigation.

- *Computer vision and machine learning for automatic scene understanding: real-time detection of obstacles and moving objects (cars, pedestrians, bicycles), identification of crossings, traffic lights, landmarks...*
- *Accessible maps: specification of annotated itineraries with landmarks (OpenStreetMaps) and exploitation of enhanced GPS navigation techniques*
- *Adapted human-machine interfaces: non-invasive feedback with minimum verbalisation and enactive, earconic/haptic signals*

PROJECT START

JUNE 2012

PROJECT END

NOVEMBER 2014

COUNTRIES INVOLVED

SLOVENIA - FRANCE - SPAIN - UNITED KINGDOM

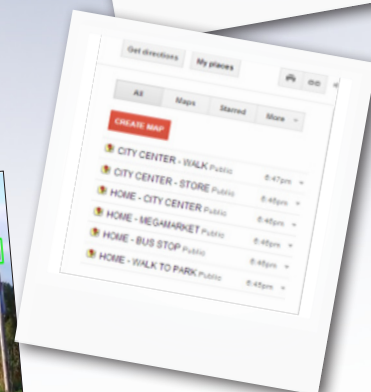
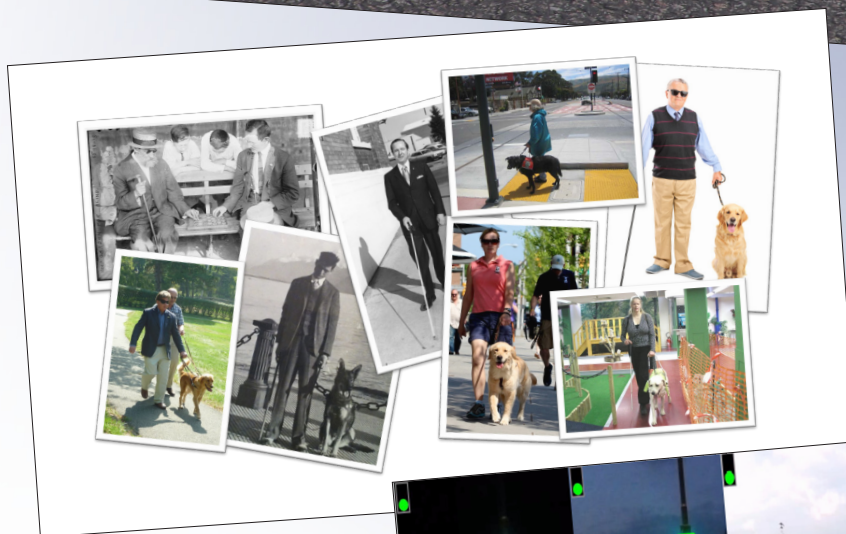
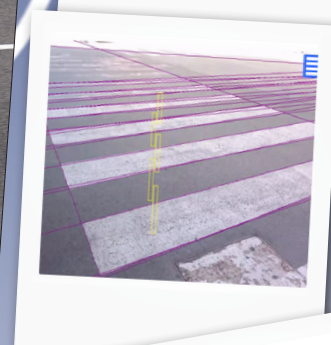
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PROJECT PARTNERS:



SUPPORTED BY:

