



myE&E sense the sonar for visually impaired people

Concept

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PROPOSAL

This venture aims to develop a simple solution for visually impaired people to better their mobility.

It is no secret that visually impaired people already use white canes and guide dogs to help them move around. But what if, they had a technology that helps them both to move around successfully as well as help them avoid colliding into obstacles without the inconvenience of own a dog. Carrying a white cane is a lesser problem. This is where myE&E sense comes in.

The 1st production version of sense is a standalone device which interprets the presence and some type of obstacles into tactile feedback felt by the people. sense has been developed with the participation of visually impaired people and it was intended that it especially meets their needs.

Future versions shall use accelerometer to incorporate the use of neural networks to identify obstacle patterns to give more and more effective guidance. These versions also contain ToF laser sensors to support use cases to allow sharp, precise and speedy object detection.

myE&E sense PRODUCT

myE&E sense will in its 1st production Version develop an integrated solution for the following Use Cases:

- sense interprets the presence of obstacles above the white cane into tactile feedback felt by the peoples skin as a vibration.
- sense is a standalone transformation of sonar depth sensing of objects to time variable haptic feedback of around 0.25 sec (0-1m) to 2.5 sec (9-10m) signal distance.
- sense can be worn as wearable with a clip as a headband, on the hand, on the arm or on the clothes (shirt) to scan in the direction of motion and can be used in conjunction with the white cane to better the orientation.
- The haptic output device is built-in and can also be worn with a very flexible supple cable at the body (hand, arm, breast, neck, earring etc.).
- The visually impaired can use sense for guidance in an indoor and outdoor environment with a reach less than 10 m (classified: short device), where a white cane is classified as a near (< 2 m) device.
- sense has battery power for 1-2 full day use and can be charged by the micro-USB port.
- sense provides a touch interface to adjust the signal characteristics in speed and intensity about $\pm 50\%$.

The future sense 2 software (estimated 1.Q. 2020) is free updatable, which provides already built-in accelerometer and ToF laser precision measure (up to 4m) when the person stands still, object detection by pattern recognition and provides a haptic feedback language to the user to communicate.

Time synchronization while every days charging can be provided through the micro-USB port, so that sense allows to work as a haptic clock (hours, quarter hours) but with limited precision. The micro-USB port also allows to set and preset device features. These features can be further adjusted while using the device.

We aim at working with governmental agencies, organizations, schools for the visually impaired, health care givers of visually impaired people to reach these individuals to demonstrate the product to them and enable them to better their orientation and mobility.

THE VALUE PROPOSITION

The products offered by myE&E **sense** offers value to customers, organizations, social services, enterprises, care givers, and the society:

Primary:

The value of **sense** to customers is, that the device can be used when and where it is needed by replacing the white cane or used in conjunction with it. This will contribute to frequent use of **sense**, resulting in increased mobility and integration of visually impaired people.

This product has an important role in the integration, safety of accidents, insurance cost savings and mobility of visually impaired people in the society.

Secondary:

Organizations and enterprises serving or employing visually impaired people will benefit from **sense** as it facilitates their business transactions and better integration in the workplace.

The Society is interested in supporting the integration of people with visual impairments. The innovation in myE&E **sense** is that guidance for visually impaired

people will be available with a small wearable device, and can delivered economically to any person in the world.

Tertiary:

Customers may let the costs for the device get covered. As a result of lesser accidents and gained mobility values will insurances, e.g. the social security, health insurance, employer or foundations cover the cost of the device especially for poor people, in order to make the cheap device useable by everyone of the target group. We integrate social services (e.g. organizations, care givers) in the testing and product provision.

INNOVATION

This product provides a new wearable support model for people with visual impairment, which is not currently available on the market. Providing local, wearable assistance and guidance is the new approach of **sense** to help visually impaired people to be more independent of the physical availability of other helpers and better their movability.

Future versions of **sense 3** with integrated Bluetooth interfaces, allow wearable solutions in conjunction with Smartphone / Smartwatch VR functionality and enhance these by additional sensors and actuators. In the future, myE&E **sense** and similar solutions might make the guide dog and possibly the white cane unnecessary for visually impaired people.

Contact myE&E **sense**

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