3D sensing for the visually impaired

Team: Heisenberg

Mission
How can we provide a visually impaired person an improved way to experience the world and function satisfactorily in complex environments?

Background/context
Blind people have fewer options to navigate through their everyday lives, usually restricted to adopting a cane or a guide animal (i.e. dog). Although they are both useful tools, they are affected by obvious limitations. How to alert someone about an approaching branch hanging on the height of their head? How can a child play with their friends e.g. tossing a ball?
In medical R&D, it is important to focus on users' experience, as hardly anything is more personal than one's definition of health. Thus, approaching the design of a wearable piece of mHealth for blind people, one should ask: What are the most important experiences blind people feel they are missing? What are the areas they feel most deprived?

Critical in the project
Pay special attention to the learning curve and ease of adaptation. Identification of realistic and common use cases. Extensive user engagement and testing.

Who to engage with
- Associations/organizations of visually impaired and their caregivers

CERN connection
- Marco Manca
- IT (OpenLab)

Explorative questions:
Which senses can be used to relay information for the user?
What links and synergies can be found between different senses?
How do different environments affect visually impaired people (home, outside)?

Target users:
People with visual impairments, their caregivers (i.e.: for very young children)

Expected outcome:
System that provides a new sense or extends existing senses enough to compensate for one that is missing, namely vision.

Success metrics:
Design is validated with a proof of concept prototype, tested with real users. Positive social impact of the solution is appropriately demonstrated.

Research plan:
Research and interact with the target group to better understand their abilities and limitations.
Look into related videos available online, e.g. previously designed solutions which did not get widely adopted (http://gajitz.com/hand-mounted-gauntlet-provides-super-bat-like-powers/), blind kid playing video games' strategy (https://www.youtube.com/watch?v=23JgGAmCGVU)