DIGITAL GUIDES FOR VISUALLY IMPAIRED ATHLETES

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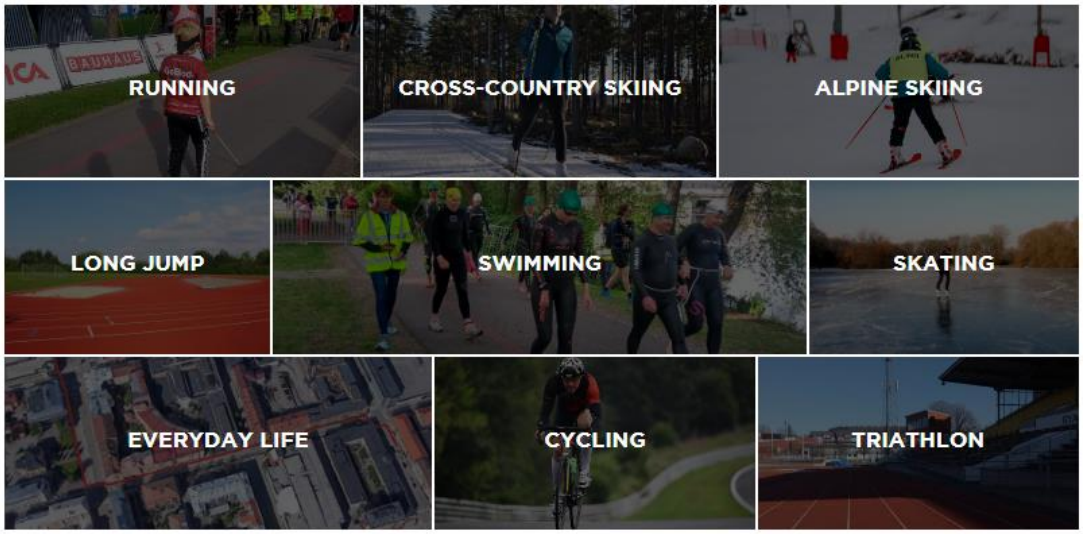
Master's Thesis: Identification and detection of objects for visually impaired athletes

In early 2022, Nordic Evolution introduced a new way for visually impaired to move without traditional companions such as man or dog. An audio guidance system that enables blind athletes to independently follow digitally designed paths and focus on the task at hand, the motion.



The master thesis aims to investigate and implement a camera based system that in real-time feedback interesting data to the blind athlete. The data can be obstacles such as cars and trees or even smaller objects as a lamp post. The data shall later be translated to audio signals, which Nordic Evolution will provide.

Tasks:

- Motion compensation/stabilization of the images, to adjust for the motion of the athlete.
- Detection of interesting data in the stabilized images such as cars and falling trees. Determine how small objects can be, to be realistic detected in terms of computing power and selection of camera pixels.
- Implement and test camera stabilization together with object detection on a test site, e.g. Campus Valla friidrottsarena.

A smart phone with internal sensors, acc, gyro or a Raspberry/Arduino or similar platform shall be used to motion compensate the video and for the object detection.

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