



BA/MA/SA:

Smartwatches in the Pool

Smartwatches are getting more common and sophisticated. They include an array of sensors, and can sometimes even measure your heart rate and position.

Ever since waterproof smartwatches have become available, triathletes and open water swimmers have enjoyed the possibility to measure swim distances and times during training. In the pool, such watches do however still show poor performance. In this thesis, we are interested in using sensor measurements of smartwatches to exploit their potential in a swimming pool. We have already done a [project using smartwatches](#) and are able to recognize swimming styles and count laps with 98% accuracy. The next step would

be to investigate how precisely we can measure the time for a lap, follow a given swimming plan and provide feedback for a swimmer. We therefore would like to collect more data from the swimmers and be able to perform a fine-grained analysis of the swimming exercises. The next step would then be to deploy our recognition methods directly on the smartwatch. This second task would require an engineering approach, where we would focus on balancing between practicability, performance and user experience.

If this sounds interesting to you, please do not hesitate to contact us so we can have a chat. We would like to hear your ideas on this topic as well!

Requirements: Creativity and programming skills are an advantage. Knowledge in Deep Learning, or solid background in Machine Learning. The student(s) should be able to work independently!

Interested? Please contact us for more details!

Contacts

- Gino Brunner: gino.brunner@tik.ee.ethz.ch, ETZ G63
- Darya Melnyk: darya.melnyk@tik.ee.ethz.ch, ETZ G93

