Technical Article

Sweetzpot, a Computational Quest towards Zen in the Art of Rowing

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Have you ever wondered how it is to glide on water fading away into the sunset? Think about applying minimal effort in a rowing shell (boat) and letting the landscape pass by in your peripheral vision conjuring up sensations of freedom and mental clarity.

Rowing is the most efficient human powered *geste* on water that aims to achieve this sensation. Sweetzpot is a project that aims to aggregate high quality data from the physical world using sensors to give feedback to a rower about the elusive sensation of a *perfect stroke.*

Sweetzpot is a mobile application that aggregates data from several sources to guide a rower towards the perfect stroke:

1. **Phone sensors:** It uses the GPS for speed and detects surge using an accelerometer to compute stroke rate. The compass of the phone gives the heading of the boat.
2. **Web services:** The service http://openweathermap.org/ gives us data such as temperature and more importantly wind velocity with respect to the direction of the boat.
3. **SensorTag sensors:** The SimpleLink™ SensorTag, developed by Texas Instruments, is attached to the oar(s) of a rowing shell in a 3D printed encasing. The sensor provides raw data from its accelerometer, gyroscope and magnetometer. The fusion of this data allows us to compute *blade inclination*, oar angle, at the start and finish of a stroke giving us the length of a stroke, and height of oar. We aim to compute the position of the oar in space at any given time through a sensor fusion algorithm.

The data garnered from all the sensors is presented in a mobile user interface to help a rower focus on his/her weak points which could be a short stroke or lack of balance to name a few. We hope that Sweetspot's computation will give the rower the right feedback to attain perfection in the art of making a perfect stroke.

Sweetzpot **Team** (in alphabetical order)

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Additional Resources:

- Get started developing today by ordering your own SimpleLink SensorTag development kit (CC2650STK)
- Get all the design files, BOM, Schematic and more with the SensorTag TI Design reference design
- Share your projects with us on Twitter by tagging @TXInstruments and #SensorTag

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