



ECE4095 Final Year Project, Semester 2, 2014

Chang Tak Kwin

Fish monitoring system for neuro-behavioral studies

Neurobehavioral Tool for Neuroscience

Solution for Behavioral Tests

- High throughput application for behavior quantification analysis
- Cost-effective solution for standard behavioral tests such as open field

State-of-the-art Features

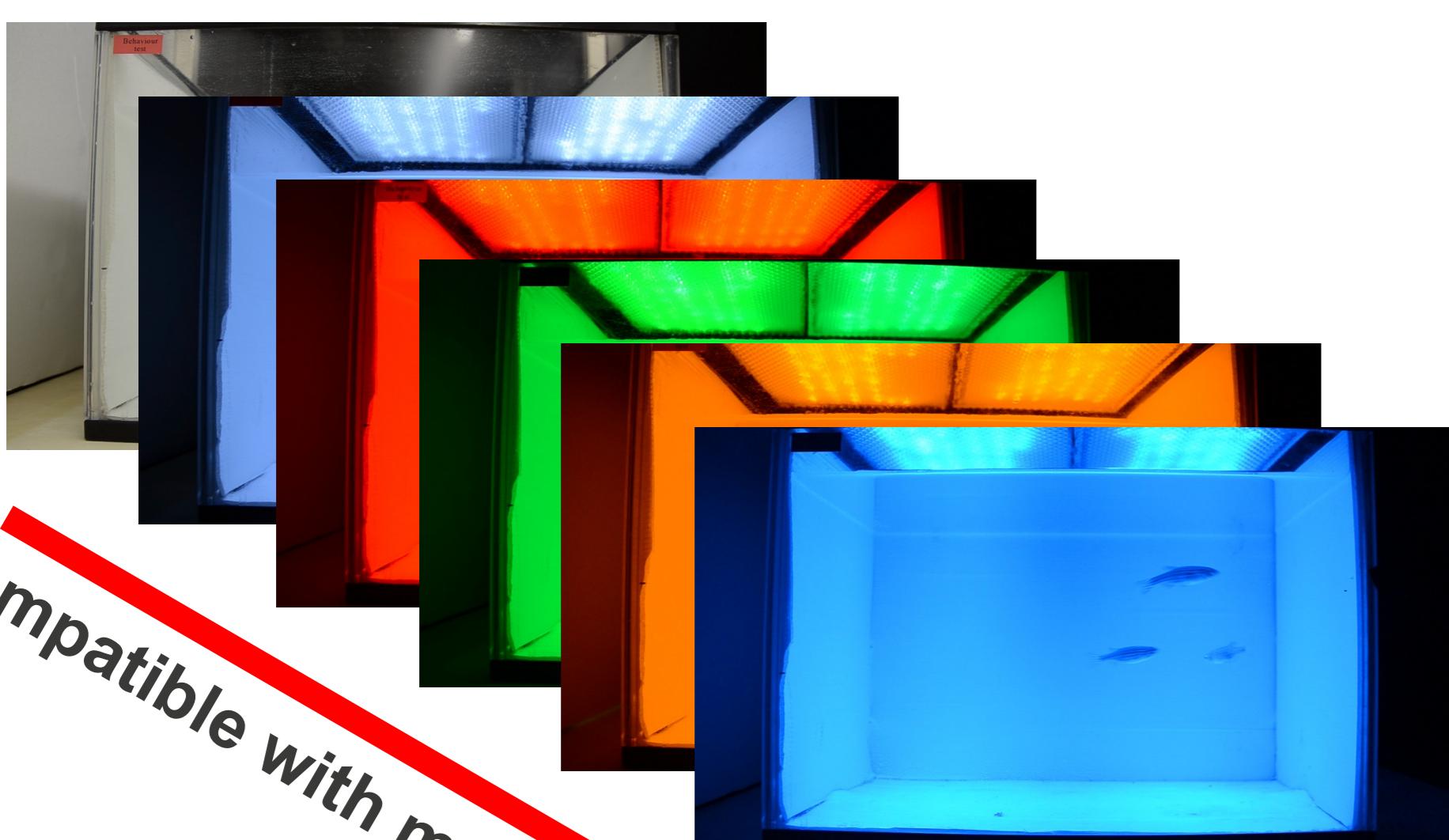
- Perform analysis on multispectral Zebrafish videos
- Provides a wide range of analytics for behavior quantification

Supervisors:

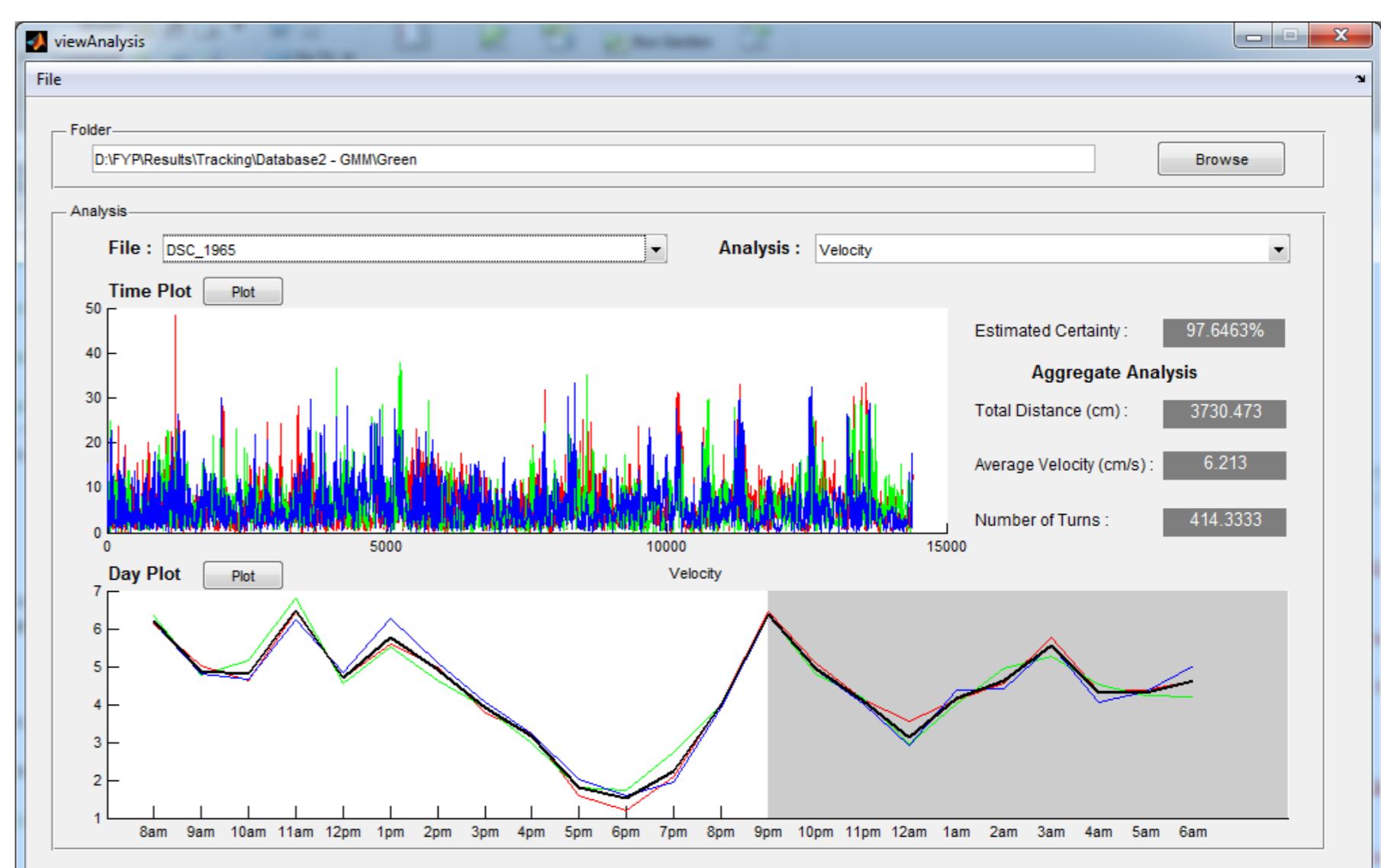
1. Dr. Melanie Ooi Po-Leen
2. Dr. Kuang Ye Chow

Examples of Analytics

- Velocity
- Spatial Preference
- Transitions to Upper Half
- Time in Upper Half
- Erratic Movements
- Freezing Duration



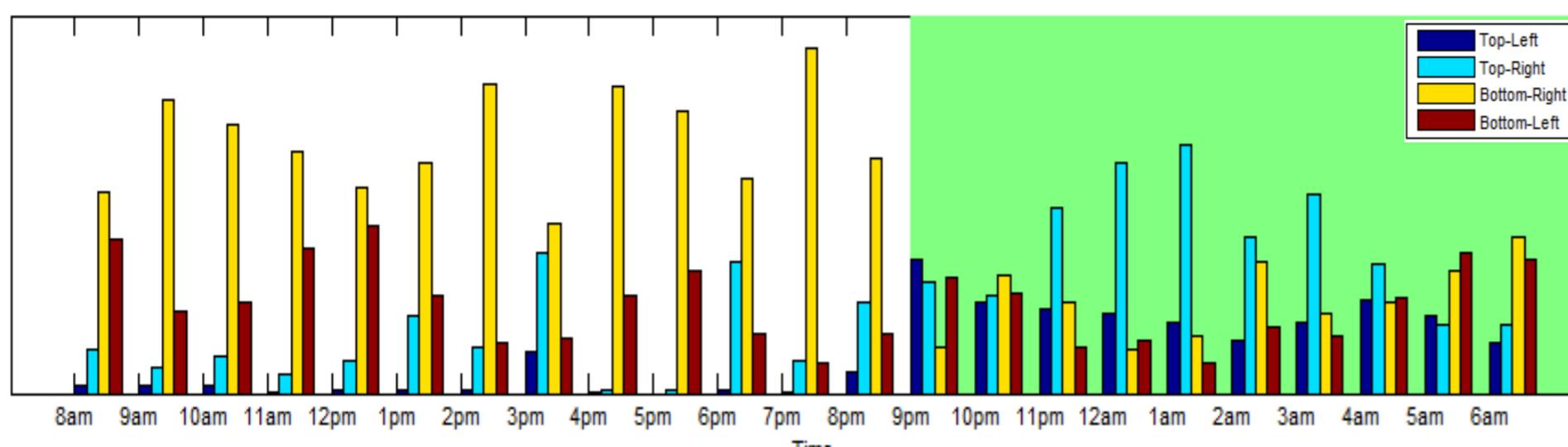
Analyze



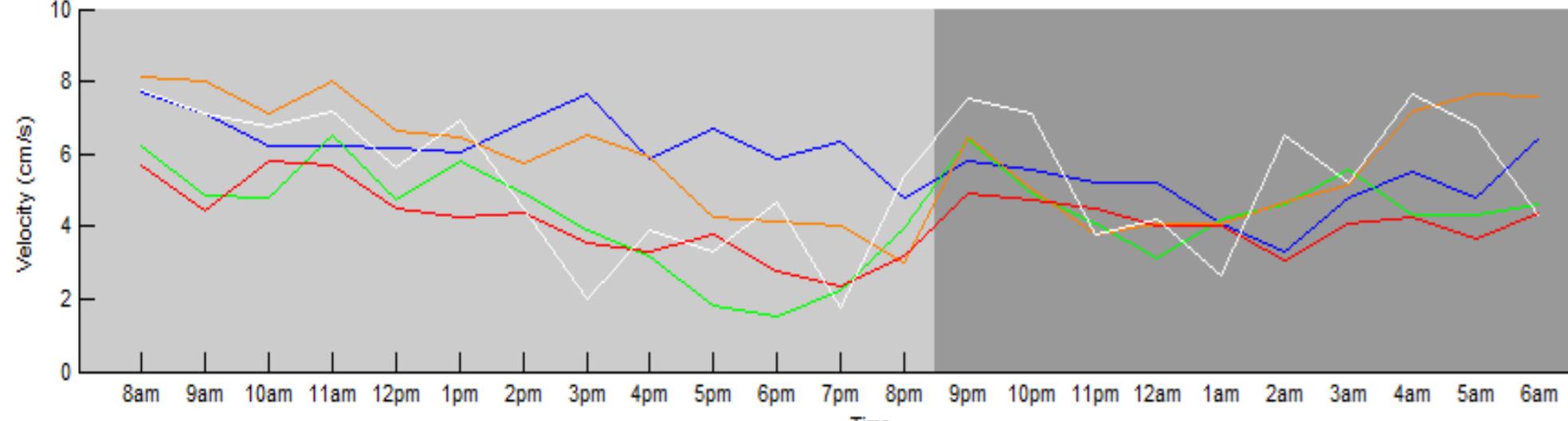
Compatible with multispectrums!

Relative Analytics

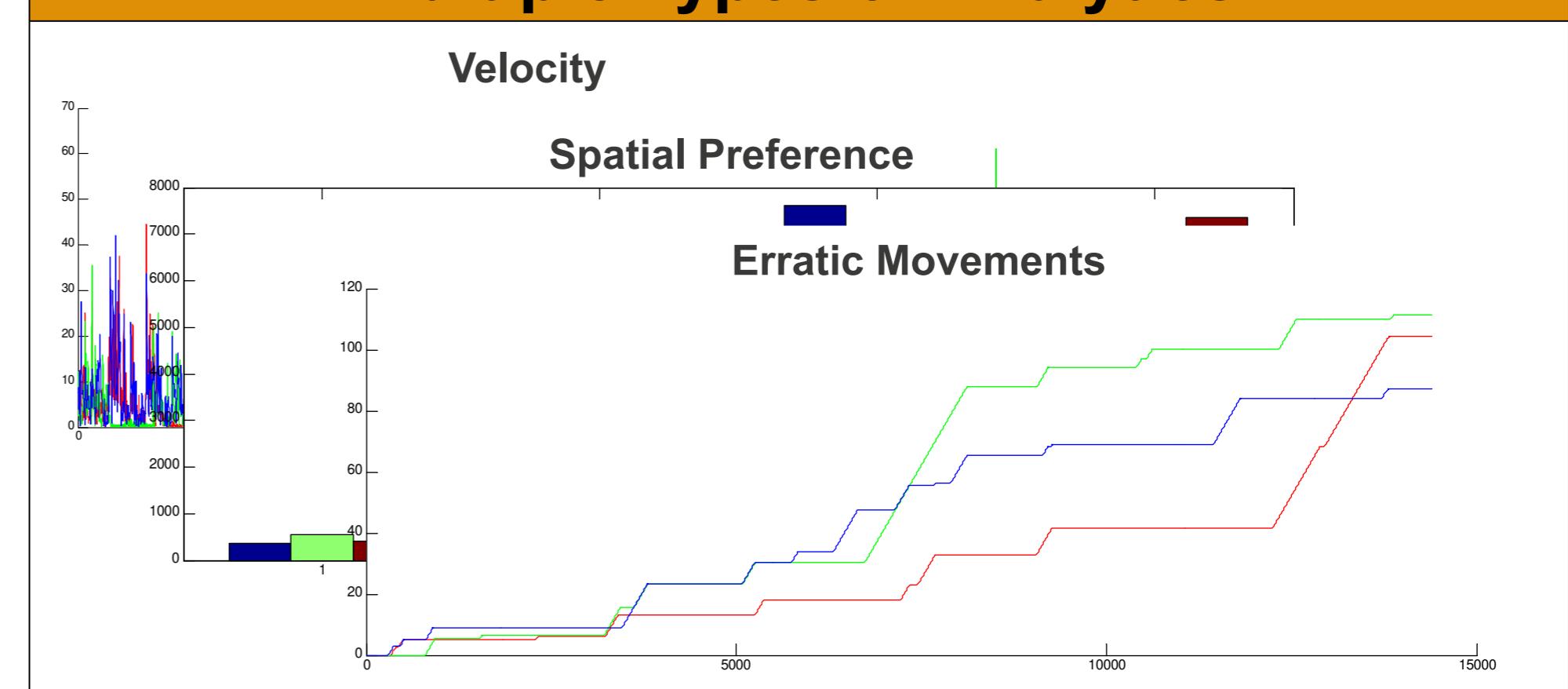
Spatial Preference over Time



Velocity over Time for All Spectrums

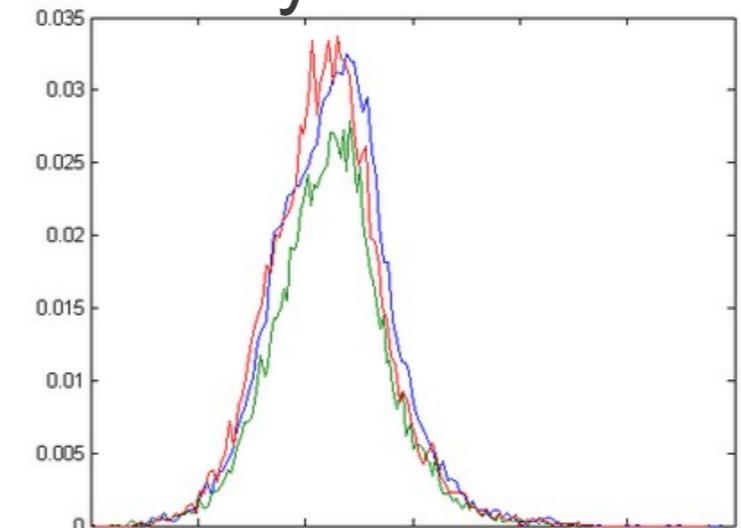


Multiple Types of Analytics

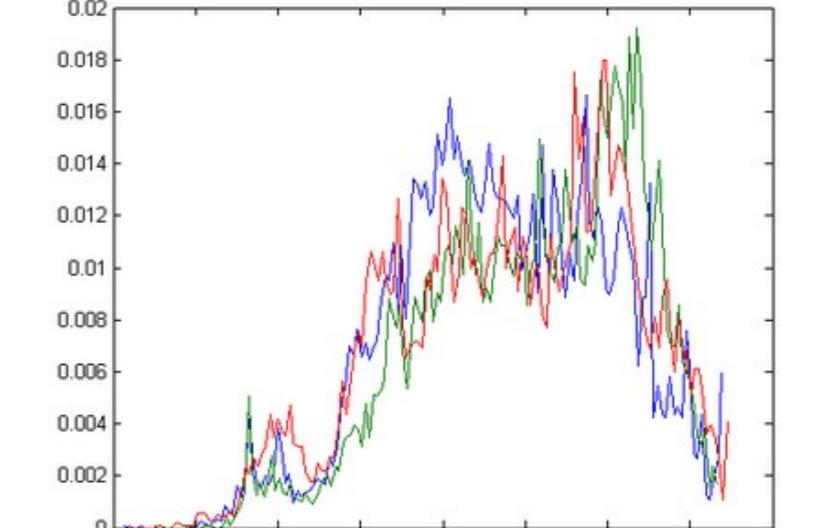


Novel Methods of Analysis

Velocity Distribution



Distance Distribution



Publication

J. S. Tan, T. K. Chang, M. P.-L. Ooi, Y. C. Kuang, C. P. Tan, and T. Kitahashi, "Fast and robust zebrafish segmentation and detection algorithm under different spectrum conditions," in *Sensors Applications Symposium (SAS), 2014 IEEE*, 2014, pp. 189-194.

