

Microsaccades: Modeling, Analysis, and Synthesis

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Abstract

Investigation of microsaccades has garnered interest in recent years. Various issues have emerged, not the least of which includes modeling, analysis, interpretation, and synthesis of these subtle but increasingly important eye movements. In this symposium we bring together researchers interested in advancing the state-of-the-art pertaining to basic and applied investigation of microsaccades as well as of their synthesis.

The symposium begins with a discussion of modelling and analysis of microsaccades (1). The link between microsaccades and oculomotor inhibition is then discussed suggesting microsaccades as measures for perceptual saliency and surprise (2). We then consider the suitability of microsaccades as a measure of cognitive load, in comparison with traditional pupillometric measures used for this purpose (3). We then move on to applied uses of microsaccades and their interpretation in studied behaviors (4,5). We end with a topic that may be quite novel to the ECEM audience, namely eye movement synthesis. This topic is concerned with the creation of artificial microsaccades for the purpose of rendering gaze, e.g., of virtual actors in gaming and film (6).

List of the talks:

- 1) Ralf Engbert, Carl J. J. Hermann, Ralf Metzler, Dynamic Modeling of Fixational Eye Movements: The Role of Neural Delays
- 2) Yoram S. Bonneh, Uri Polat, Misha Tsodyks, Yael Adini, Saliency and Surprise Revealed by Microsaccades
- 3) Krzysztof Krejtz, Izabela Krejtz, Andrew T. Duchowski, Cezary Biele, Anna Niedzielska, Evaluating Microsaccades for Cognitive Load Measurement
- 4) Nina Gehrler, Michael Schönenberg, Krzysztof Krejtz, Andrew T. Duchowski, Microsaccades of ADHD Patients during Facial Affect Recognition
- 5) Justyna Żurawska, Andrew T. Duchowski, Microsaccades during Visual Search of Gaussian Terrain
- 6) Andrew Duchowski, Sophie Jörg, Krzysztof Krejtz, Perception of Synthesized Microsaccadic Jitter