



Computational Science & Engineering

CSE Seminar at McGill

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EVALUATING REFLEX FUNCTION IN THE PRESENCE OF SWITCHING

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Macdonald-Harrington Building, Room G1

Abstract

Eye movements are executed by the brain using an elegant switching mechanism that changes active pathways (and dynamics) on the fly. This poses special challenges for computational analysis and diagnosis of reflex function. Using the vestibule-ocular reflex (VOR) to illustrate, we will see through examples with normal (healthy) subjects and patients with deficits in vestibular function, the computational steps taken to:

1. First segment the data into potential response modes (classification).
2. Frame models that can represent the reflex dynamics.
3. Adapt regression algorithms to allow for the introduction of transients with switching.
4. Fit the data with the algorithms and verify quality of fits.

These approaches are valid for any data comprised of pooled short segments of observations, whose duration is shorter than the required steady state intervals.

