Texas Tech University. Applied Mathematics Seminar.

Looking Through Your Eyes: Optimally

Bijoy K. Ghosh, Texas Tech University

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ABSTRACT. In this talk we present a modeling and control strategy to orient your eyes – typically for the purpose of tracking a moving target. Eye orientations are constrained by Listing's Law originally proposed in the 19th century by Listing, Donders and Helmholtz. The constrained space is parameterized as a sub manifold of SO(3) and we define a Riemannian Metric on this space. A kinetic energy is defined using this metric and geodesic curves are computed using the corresponding Euler Lagrange equation. Subsequently we add on a potential energy term and an external generalized torque with the eventual goal to study eye tracking problems with muscles actuating the eye rotations. We demonstrate our results using simulation.