Asymptotic Necessary Optimality Conditions in Continuous-Time Optimization

Valeriano Antunes de Oliveira

Sao Paulo State University

In this talk, we examine a continuous-time nonlinear optimization problem posed in the L^∞ space. This problem involves minimizing a functional that is given in integral form and is subject to both equality and inequality constraints. We will provide Karush-Kuhn-Tucker type necessary optimality conditions that are asymptotically satisfied by optimal solutions. This type of optimality condition is particularly significant in the design of numerical methods. In addition, we will present an augmented Lagrangian type method and conduct a convergence analysis concerning viability and optimality. Furthermore, a constraint qualification associated to the asymptotic Karush-Kuhn-Tucker type conditions is discussed. (This study was financed, in part, by the São Paulo Research Foundation (FAPESP), Brazil. Process Number 2022/16005-0.)

In Special Session 21 on Optimization and Control at the Mathematical Congress of the Americas 2025.

MCA 2025 internal code: SS21-T01