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Optimization and Equilibrium Seminar

Charla 1:
Speaker: Julio Deride, Universidad Técnica Federico Santa María, Chile
Title: One-Step Estimation with Scaled Proximal Methods.

Abstract: We study statistical estimators computed using iterative optimization methods that are not run until completion. Classical results on maximum likelihood estimators (MLEs) assert that a one-step estimator (OSE), in which a single Newton-Raphson iteration is performed from a starting point with certain properties, is asymptotically equivalent to the MLE. We further develop these early-stopping results by deriving properties of one-step estimators defined by a single iteration of scaled proximal methods. Our main results show the asymptotic equivalence of the likelihood-based estimator and various one-step estimators defined by scaled proximal methods. By interpreting OSEs as the last of a sequence of iterates, our results provide insight on scaling numerical tolerance with sample size. Our setting contains scaled proximal gradient descent applied to certain composite models as a special case, making our results applicable to many problems of practical interest. Additionally, our results provide support for the utility of the scaled Moreau envelope as a statistical smoother by interpreting scaled proximal descent as a quasi-Newton method applied to the scaled Moreau envelope.

Charla 2:
Speaker: David Torregrosa-Belén, Universidad de Alicante, Spain
Title: Splitting algorithms for monotone inclusions with minimal lifting.

Abstract: Splitting methods are a useful tool for finding zeros in the sum of monotone operators by handling separately each one of the operators involved in the problem. There is a wide variety of splitting algorithms for tackling these problems with a small number of operators, but if the number of monotone operators in the problem increases one generally is restricted to the use of product space reformulations. These techniques have the inconvenient that when applying them, the "dimension" of the algorithm grows bigger than expected, which usually leads to a worse performance of the method. Recently different schemes have been proposed which manage to reduce this "dimension", also called lifting, and even proof that this reduction is minimal according to some rules. In this talk, we present the first splitting algorithm with minimal lifting to handle a special case of monotone inclusions in which some of the monotone operators are composed with linear operators.

Link de zoom:
https://reuna.zoom.us/j/5185702306?pwd=cEtaeGVqUk1ZY0lkQ2Z0WU4yNlFmUT09
Miércoles 23 de Noviembre de 2022, 10:30 Hrs.
Sala de Seminarios John Von Neumann del Centro de Modelamiento Matemático (Beauchef 851, Edificio Norte, Piso 7).