



*Departamento de Ingeniería de Comunicaciones*

## CONFERENCIA

# From Seismology to Compressed Sensing and Back: a Brief History of Optimization-Based Signal Processing

impartida por

**Dr. Carlos Fernández Granda**

Assistant Professor of Mathematics and Data Science  
Courant Institute of Mathematical Science  
& Center for Data Science, New York University

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**Abstract:**

In this talk we provide an overview of the history of  $l_1$ -norm minimization applied to underdetermined inverse problems. In the 70s and 80s geophysicists proposed using  $l_1$ -norm minimization for deconvolution from bandpass data in reflection seismography. In the 2000s, inspired by this approach and by magnetic resonance imaging, a method to provably recover sparse signals from random projections, known as compressed sensing, was developed. Theoretical insights used to analyze compressed sensing have recently been adapted to understand the potential and limitations of  $l_1$ -norm minimization for deterministic problems. These include super-resolution from low-pass data and the deconvolution problem that originally motivated the geophysicists.