1108-00-35 **Ben Adcock*** (ben_adcock@sfu.ca). *Function approximation via infinite-dimensional weighted l^1 minimization.*

In a number of applications one is required to approximate a smooth multivariate function from a small number of pointwise samples. Classically, this task is carried out by methods such as interpolation or least squares. Yet with the advent of compressed sensing there has been an increasing focus on the use alternative techniques based on convex optimization. In this talk I will describe an infinite-dimensional framework for function approximation via weighted l^1 minimization. I will explain why working in infinite dimensions is both theoretically and practically important, and describe the critical role that weights play in the minimization. In the second half of the talk I will address the following question: does weighted l^1 minimization always perform at least as well as classical least squares? An affirmative answer to this question is of practical relevance, since it means that such techniques should always be used in over classical tools in applications where the primary limitation is the amount of data available. I will present a mathematical framework for examining this question, and answer it in the affirmative for the case of polynomials approximations. Finally, I will discuss the role that sparsity plays this framework, and present some open problems. (Received November 28, 2014)