Neural Networks based Stochastic Frontier Model for efficiency analysis with Panel Data

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Abstract: Stochastic Frontier Model was first introduced by Aigner, Lovell, and Schmidt (1977) and Meeusen and van den Broeck (1977) as a parametric model for estimating production efficiency while accounting for statistical noise. Further developments in the field have resulted in a multitude of unbiased estimators which have applications when certain conditions are met. However, classical SFM requires the specification of production function based on the knowledge about the relationship between input and output variables. In this presentation, we will review the classical models in SFMs literature and their estimation algorithms for efficiency analysis with panel data. And we discuss and propose a new Neural Network based SFM for efficiency analysis with panel data.