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Titolo: "A Machine Learning and Labour Economics: Explorations and Applications"

In this presentation I will illustrate the research objectives of the VISITINPS research project entitled: "A Machine Learning Approach to the Economic Analysis of Big Data". Such project is based on a new approach to applied econometrics and statistics, based on techniques developed mainly by the new stream of literature originating in computer and data science under the very general label of Machine Learning and computational statistics. These new arrays of computer-based statistical algorithms provide novel methodological perspectives, in relation to their flexibility in requiring fewer distributional assumptions than in classical statistical models and the ability to do statistical inference without the limitations imposed by mathematical tractability. One area where Machine Learning has been shown to outperform traditional statistical techniques is predictions and the capability to highlight models' non-linearities and interactions among explanatory variables of interest that may not be apparent under standard linear econometric modelling. Such enhance predictive capability can also be employed in causal estimation settings.

This research project aims at contributing to this recent emerging literature by employing Machine Learning techniques to the analysis of the large administrative datasets available at INPS.

Two types of applications are proposed. The first is a standard prediction problem, where we aim at predicting individual labour market status and earnings using predetermined individual characteristics and their (possibly non-linear) interaction as well as in connection with the institutional and economic environment. The second is a causal problem, where we aim at estimating the causal impact of temporary contracts on earnings, employment prospects and transition to permanent contracts exploiting Machine Learning predictive capabilities to construct valid counterfactuals to the temporary contract status.

Such analysis may provide the policy maker with a flexible tool for predicting individual labour market trajectories, identifying those categories at risk of poor performance, and designing early interventions to maximize the probability to improve their labour market status.