

Code B_2395

Department	Mathematics and Computer Sciences
UniCa reference person	Monica Musio
Project title in English	Model selection via proper scoring rules
Project title in Italian	Selezione dei modelli attraverso regole di punteggio proprie
Subject area of reference (World University Ranking)	PHYSICAL SCIENCES (inc. Mathematics, Chemistry, Geology, Earth & Marine Sciences)
Project summary and VPS' profile	<p>Modern-day complex problems almost naturally lead to the definition of complex statistical models, or even combination of models in order to capture different features of the interest phenomenon. Examples are mixed effects models, latent variable models, linear and exponential mixtures, model for directional data. Obtaining the likelihood function may thus become analytically or computationally very hard. Several ideas are undergoing rapid development. The objective is to exploit features of likelihood-based, Bayesian and frequentist inference without the need of full specification or direct calculation of the likelihood function. In this optic, proper scoring rules can be used as an alternative to the full likelihood, when the aim is to increase robustness of inference or to simplify computations. Examples include the Tsallis score, which provides a robust estimator and the Hyvarinen score with the nice property of homogeneity, which implies that the quoted distribution need to be known up to a constant. In these complex scenario model selection procedure become very challenging. explored to use homogeneous proper scoring rules instead of the log score as yardstick for measuring and comparing the quality of statistical models in a Bayesian context. The resulting model selection procedure, when conducted prequentially, is consistent under mild conditions. In this project we propose to extend the use homogeneous scoring rules for model selection procedure in complex models from a frequentist point of view. Theoretical properties of the resulting procedure will be studied and investigated and some application with real data will be given.</p>
Proposed length of stay	Short visit of 6 days
Expected period of activity	March 2024
Academic position of the VPS'	Professor
Course of Study	Dottorato di ricerca (PhD Course)
Language of instruction	English
