Title: Solomonoff Prediction in Philosophical Perspective

Abstract:
The 1960 and 1964 papers of Raymond J. Solomonoff mark the birth of the branch of theoretical computer science that is now known as *algorithmic information theory* or *Kolmogorov complexity*. The theory of prediction that emerges from those papers can be summarized in the slogan that *in a universal setting, there are universal predictors*. Here the term 'universality' is to informally convey the feature of *full generality*, of *including everything*.

The question of the universality of the setting revolves for large part around the status of the central assumption of *computability*. Different positions regarding this assumption give rise to different interpretations of the formal setting. The aim of this talk is to provide an understanding of Solomonoff's result and its possible interpretations.

This will be achieved by relating Solomonoff's ideas to two themes from the philosophy of science. First, it is insightful to frame the discussion in terms of the *scientific realism* debate. The common and arguably most straightforward interpretation of Solomonoff Prediction adopts a realist stance, but it commits us to a questionable metaphysical assumption of computability. I argue that a pragmatic interpretation, that trades the *reliability* of the universal predictors for their *optimality*, holds more promise. Second, I relate Solomonoff's work to the current debate about *induction*. Universal prediction can be seen in opposition to a recent emphasis on local and material induction, while it is much in line with meta-inductivist ideas.