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The increasing availability of massive amounts of data and the need of performing accurate forecasting of future behavior in several scientific and applied domains demands the definition of robust and efficient techniques able to infer from observations the stochastic dependency between past and future. The forecasting domain has been influenced, from the 1960s on, by linear statistical methods such as ARIMA models. More recently, machine learning models have drawn attention and have established themselves as serious contenders to classical statistical models in the forecasting community. This talk will present an overview of machine learning techniques in time series forecasting by focusing on three aspects : the formalization of forecasting problems as supervised learning tasks, the discussion of local learning techniques as an effective tool for dealing with temporal data and the role of the forecasting strategy when we move from one-step to multiple-step forecasting.