



FROM MACHINE LEARNING TO LEARNING - BASED DECISION MAKING

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Abstract:

The convergence of ubiquitous sensing, wireless communication, distributed computation, and cloud services has generated an ever-growing hype for the use of machine learning to enable new services and improve processes and products in many fields. Machine learning approaches are successfully used in sound and image recognition, medicine, and retail, to name a few. However, when models derived with machine learning are used to take (autonomous) decisions - thus closing a feedback loop around the phenomenon under study - particular care must be taken in the learning phase. In the field of control engineering, the use of learned models for decision making and feedback control has been studied for decades, and it is still an active research area. This talk starts from a motivating example and presents recent results and research directions at the interface between machine learning and learning-based decision making, touching aspects such as stability, robustness and constraints handling.