

# Machine learning for adaptive video streaming

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HTTP Adaptive Streaming (HAS) has become the standard for adaptive video streaming services over the last decade. Typically a simulation set-up for HTTP streaming systems such as DASH involve a big number of parameters. A challenging task in ensuring Quality of Experience (QoE) in HTTP adaptive streaming is the initialisation of parameters with respect to the context in which the session is executed. While sensitivity analysis for each individual parameter is not difficult (can be achieved through machine learning techniques such as regression analysis), adapting the entire set of parameters to changing environment is a highly non-trivial task. Therefore, there is a need for a principled approach to parameter selection and adaptation. The objective of this master thesis is to use machine learning techniques to devise a strategy for parameter adaptation in HAS scenarios. While the use of machine learning techniques such as Q-learning in adaptive video streaming is not uncommon (see [2, 3, 4]), there is ample scope to exploit more sophisticated techniques to improve overall QoE of adaptive video streaming. The candidate is expected to explore them and propose improvements over existing algorithms or devise new ones. The thesis will be based on an existing code basis (see [maci-research.net](http://maci-research.net))

The thesis will be jointly supervised by Denny Stohr from Multimedia Communications Lab, Technische Universität Darmstadt. The candidate will get an opportunity to test his/her ideas on full-stack simulation environments.

Good programming skills (preferably Python) are a prerequisite. Willingness to learn some machine learning topics as and when required is also necessary for this project.

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## References

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