

Project Proposal

DD2435 Machine Learning, Advanced Course

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For this project we will look into sparse modelling, and we will be aiming for an A grade. This project will rely heavily on the work presented in [1] and [2]. In this work, we will focus on the following subset of tasks proposed by Pawel:

1. Implement the proposed methods, validate Tipping's results on a toy problem
2. Deploy RVM on selected regression and classification problems, and compare the results and interpretation to SVM
3. Investigate scaling properties of RVMs (compare with SVMs)
4. Critically examine/discuss Tipping's arguments in favour of RVMs
5. Review the literature on RVMs – mention what other algorithms have been proposed based on RVMs and identify a few seminal examples where RVMs have been successfully applied

All group members will read and analyze both [1] and [2] in depth. Afterwards, Adrian and Leo will mainly focus on (3), (4) and (5), whereas Clara and Bas will focus on (1) and (2). Throughout this process, we will schedule various meetings to discuss our progress, and help each other out when necessary.

References

- [1] M. E. Tipping, "The relevance vector machine," in *Advances in neural information processing systems*, pp. 652–658, 2000.
- [2] M. E. Tipping, "Sparse bayesian learning and the relevance vector machine," *Journal of machine learning research*, vol. 1, no. Jun, pp. 211–244, 2001.