X-SVM (E**X**planable and computationally efficient SVM)

Support Vector Machines (SVM) are widely used for classification, particularly in biomedical applications. However, traditional SVMs have limitations when applied to complex, high-dimensional, and heterogeneous datasets such as multi-omics and medical imaging data. They do not have a closed form and it is computationally expensive. This project proposes a new light support vector machine "**X-SVM**" which has a closed form and is computationally cheap and can be used in all machine learning algorithms and in LLM foundation models. using modification on the adaptive loss functions and a custom kernel function which is designed to capture more complex patterns beyond traditional linear, polynomial, or radial basis function (RBF) kernels.

Project Type: Research

Internship Batch:

- **Batch 1:** May 11 to July 10, suitable for Education City students, i.e., CMUQ, TAMUQ and HBKU students

Expected Learning Outcomes

- Exposure to Machine learning algorithm SVM.
- Code is ready in Matlab and we are interested to write it in Python/R for a manuscript publication and generating more citation.

Preferred Skills

- Coding in Python/R

Mentors

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