



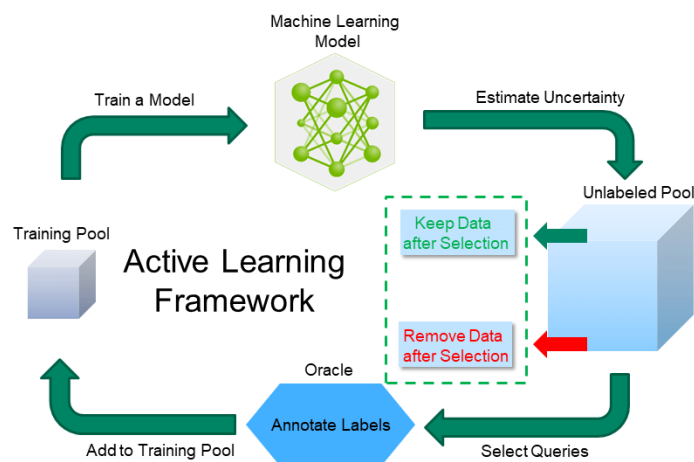
Active Learning

Active learning is a machine learning approach that optimizes the training process by selectively choosing which data points should be labeled by an oracle (typically a human annotator) to achieve higher model performance with fewer labeled examples. By strategically choosing data points that are challenging or uncertain for the current model, active learning maximizes the learning efficiency and reduces the need for vast amounts of labeled data. This is especially important in situations where data labeling is expensive or time-consuming.

Active learning algorithms can be categorized into two groups: uncertainty and diversity sampling. Uncertainty sampling prioritizes instances where the model is unsure, while diversity sampling ensures broader coverage of the feature space. Active learning enables models to achieve higher accuracy with fewer labeled examples, making it a crucial technique in various real-world applications.

In this project, we will improve upon existing active learning literature by utilizing novel ideas in the area of uncertainty estimation for non-Bayesian neural networks, combined with insights from hierarchical representation learning to improve data diversity.

Requirements: Strong motivation, knowledge in deep learning, or a solid background in machine learning. Previous experience with Python and libraries such as PyTorch is an advantage. We will have weekly meetings to discuss open questions and determine the next steps.



Interested? Please contact us for more details!

Contact

- Benjamin Estermann: besterma@ethz.ch, ETZ G60.1
- Till Aczel: taczal@ethz.ch, ETZ G60.1