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**Towards an optimization-driven all-inclusive data analysis**

**Abstract:**

Common tools from machine learning and artificial intelligence are implemented as pipelines that subsequently - and separately - perform the feature selection, data reduction, model inference and model validation steps. Efforts taken over past years in formulating a unified "all-inclusive" mathematical theory and computational framework for a joint optimal solution of these problems will be explained, originating from a seminal work done almost 15 years ago together with Rupert Klein.