UNIVERSITÄT BONN

SMART DATA ANALYTICS
FROM DATA TO KNOWLEDGE

Fraunhofer IAIS

Hybrid Learning Approaches

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Context and Area of the Topic

- Most machine learning approaches are designed for a particular subset or task.

- Combining machine learning approaches improve the overall result by either helping to tune one another, generalize or adapt to unknown tasks.

Introduction to the Topic

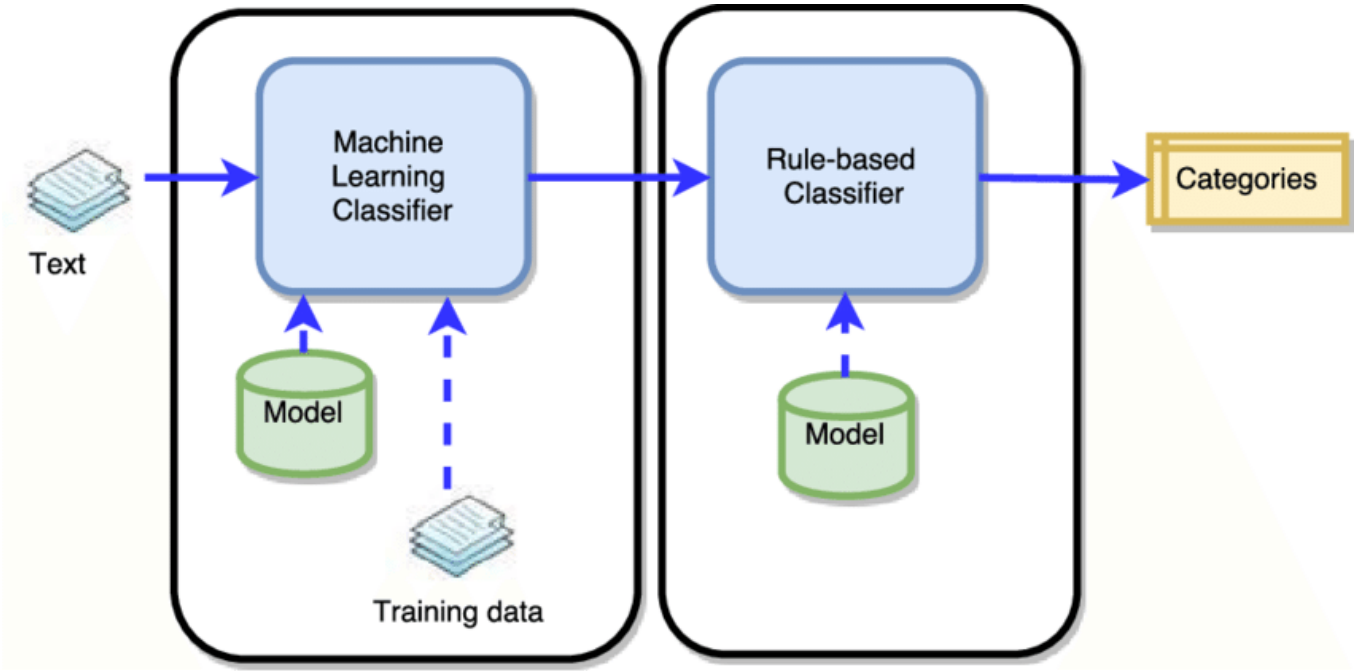
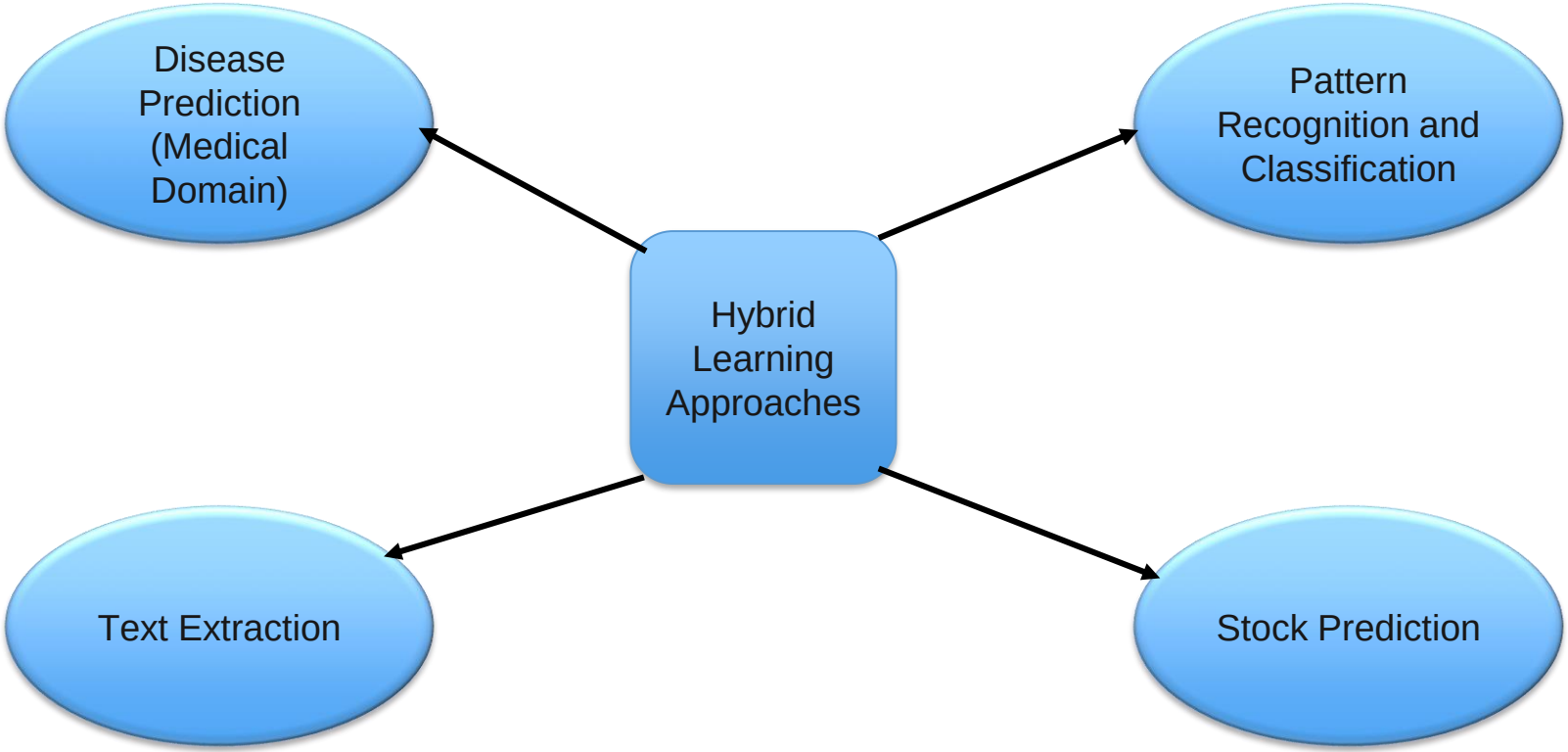


Fig: Example of Hybrid Learning Approach
(Adapted from Villena et al., 2011)

Use Case / Motivation Scenario/Problem



Main Related Work, Tools, Models

- Disease Prediction (Medical Domain):
  - Paper 1: Kaul, Deeksha & Raju, Harika & Tripathy, B.K. ***Comparative Analysis of Pure and Hybrid Machine Learning Algorithms for Risk Prediction of Diabetes Mellitus***.
  - Paper 2: Yang H, Liu J, Sui J, Pearlson G, Calhoun VD. ***A Hybrid Machine Learning Method for Fusing fMRI and Genetic Data: Combining both Improves Classification of Schizophrenia.***

Main Related Work, Tools, Models

- Pattern Recognition and Classification:
  - Paper 1: Wong Lai Ping and A. T. L. Phuan. ***A novel hybrid learning scheme for pattern recognition***
  - Paper 2: Bala, Jerzy & Huang, J & Vafaie, Haleh & DeJong, K & Wechsler, H. ***Hybrid Learning Using Genetic Algorithms and Decision Trees for Pattern Classification.***

Main Related Work, Tools, Models

- Stock Prediction:
  - Paper 1: Choudhry, Rohit & Garg, Kumkum. ***A Hybrid Machine Learning System for Stock Market Forecasting.***
  - Paper 2: Yu, Honghai & Liu, Haifei. ***Improved Stock Market Prediction by Combining Support Vector Machine and Empirical Mode Decomposition.***

Main Related Work, Tools, Models

- Text Extraction:
  - Paper 1: E. F. A. Silva, F. A. Barros and R. B. C. Prudencio. ***A Hybrid Machine Learning Approach for Information Extraction***
  - Paper 2: M. Abdelrahim, C. Merlos and T. Wang. ***Hybrid Machine Learning Approaches: A Method to Improve Expected Output of Semi-structured Sequential Data***

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Thank You