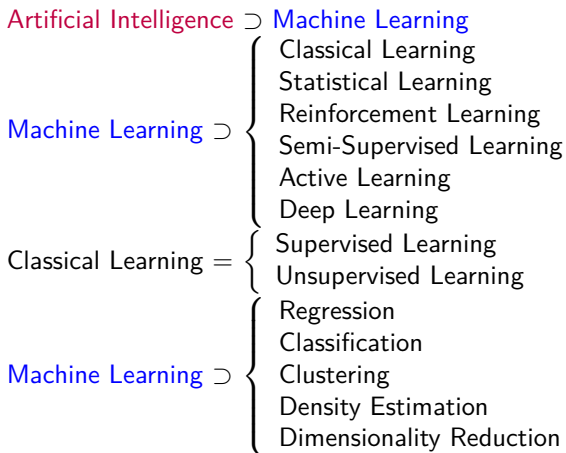


# Introduction to Machine Learning

Prof. Dr. H. H. Takada

Quantitative Research – Itaú Asset Management  
Institute of Mathematics and Statistics – University of São Paulo

# Concepts



# Contents

- **Inference in Probabilistic Models:** Probabilistic Reasoning; Basic Graph Concepts; Belief Networks; Graphical Models; Efficient Inference in Trees; The Junction Tree Algorithm; Making Decisions
- **Learning in Probabilistic Models:** Statistics for Machine Learning; Learning as Inference; Naive Bayes; Learning with Hidden Variables; Bayesian Model Selection
- **Machine Learning:** Machine Learning Concepts; Nearest Neighbor Classification; Unsupervised Linear Dimension Reduction; Supervised Linear Dimension Reduction; Linear Models; Bayesian Linear Models; Gaussian Processes; Mixture Models; Latent Linear Models; Latent Ability Models
- **Dynamical Models:** Discrete-State Markov Models; Continuous-State Markov Models; Switching Linear Dynamical Systems; Distributed Computation
- **Approximate Inference:** Sampling; Deterministic Approximate Inference