Combining Control Theory & Machine Learning

State of the art review & Perspectives of application on Software-Defined Networks

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● Context
  ■ Reinforcement Learning, (un-)supervised learning
    → Feedback loops
  ■ Optimal, robust and adaptive control

● Observations
  ■ Points of divergence & convergence of the two fields
  ■ Complementary strengths & limitations of each approach

● Objectives
  ■ Bridging the gap between communities
  ■ Combinations categorization
    → works done & to-be-done

● Approach
  ■ Review paper
    → Joined theory formulation: ML for modeling & CT for decisions
    → One as a use-case for the other: e.g. ML’s learning rate control with CT
  ■ Application to Software-Defined Network
    → Optimal placement of virtual nodes and network over the physical ones