Performance Optimization of Big Data Transfer in High-performance Networks: A Reinforcement Learning Approach

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Title: Performance Optimization of Big Data Transfer in High-performance Networks: A Reinforcement Learning Approach

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Difficulty: Moderate

Specialization: Computer and Network Security

If other, please specify:

Most Appropriate Course: Project II

Brief Description: Choosing optimal parameter values for big data transfer in HPNs

Number of students needed: 1

Outcomes and Deliverable: Source code; research paper

Skills Required: Understanding of machine learning algorithms or willing to learn about them; programming skills in Python and Skikit-learn libraries

Available Resources: Domain knowledge; code base; testbed

Program Goal: CISC 1.1: Mathematical Analysis, CISC 1.2: Sound Reasoning, CISC 1.3: Develop Solution CISC 2.2: Software Platform, CISC 2.3: Networking, CISC 2.4 Data Structure, CISC 2.5 Analysis of Algorithms CISC 3.1: Explore New Methodologies CISC 4.1: Written Communication, CISC 4.2: Oral Communications
**Student Learning Outcomes:**
1a: The student should be able to analyze a problem in a manner that facilitates the design of its solution.
1b: The student should be able to apply relevant principles of computing during their analysis of a problem.
2b: Student is able to develop a software solution from a formal design specification.