

Optimization of Roster Construction In Sports

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Abstract : In Major League Sports (MLB, NBA, NHL, NFL), it is the Front Office Staff (FOS) who make decisions about who plays for their respective team. The FOS bear the brunt of the responsibility for acquiring players through drafting, trading and signing players in free agency while typically contesting with maximum roster salary constraints. The players themselves are volatile assets of these teams- their value fluctuates with age and performance. A simple comparison can be made when viewing players as assets. The problem here is similar to that of optimizing your investment portfolio. The goal is ultimately to maximize your periodic returns while tolerating a fixed risk (degree of uncertainty/ potential loss). Each franchise may value assets differently, and some may only tolerate lower risk levels- these are examples of factors that introduce additional constraints into the model. In this talk, we will detail the mathematical formulation of this problem as a constrained optimization problem- which can be solved with classical machine learning methods but is also well posed as a problem to be solved on quantum computers

Keywords : optimization, financial mathematics, sports analytics, simulated annealing

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