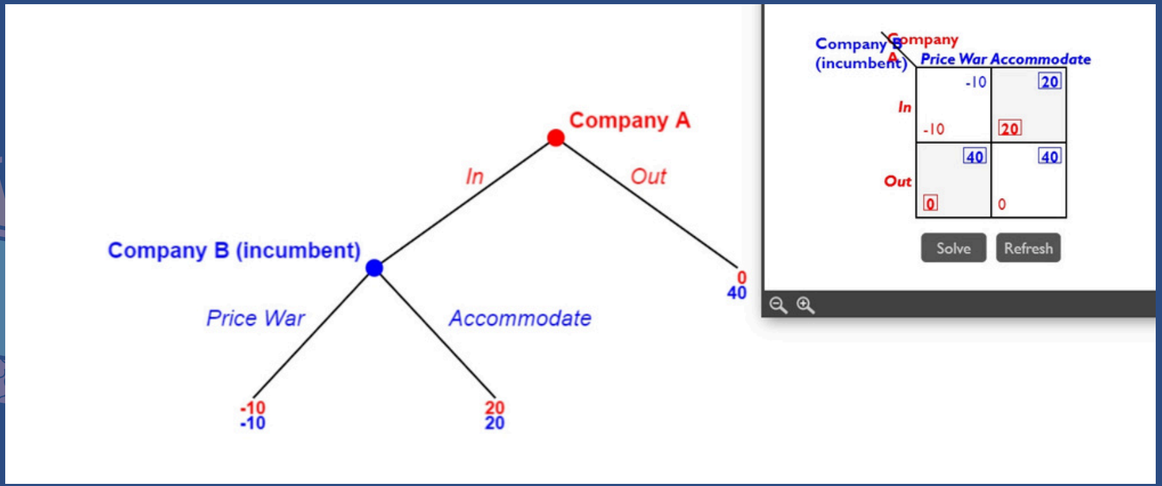
Behavior Economics and AI Learning in the Game Theory Application

abstract

This study enhances traditional game theory by integrating behavioral economics, dynamic environmental modeling, and AI-driven analytics. Addressing the limitations of idealized assumptions in classical game theory, this research incorporates insights into human irrationalities and emotional biases, while adapting models to reflect dynamic strategic environments. The proposed paradigm significantly enriches the understanding of complex strategic interactions, particularly in volatile markets, offering more realistic and applicable insights for economic and strategic decision-making.

Intro and proposal

The entry deterrence game



In a typical Entry Deterrence Game, the incumbent has choices that can either deter entry or be less aggressive, aiming to coexist with the entrant. The entrant decides whether to enter the market based on these actions and the associated costs and benefits. AI can optimize these decisions by using historical data and predictive analytics to anticipate the entrant's responses and adjust strategies accordingly.

Incumbent \ Entrant	Enter (E)	Not Enter (N)
High Barrier (H)	$(-5,-2),(-2,-1)_{AI}$	$(0,0),(3,0)_{AI}$
Low Barrier (L)	$(-1,-5),(0,-4)_{AI}$	$(1,0),(2,0)_{AI}$