Peer-to-Peer Networking

Exercises for Lecture P2P Case Study: BitTorrent

Start exercise by reading the paper (provided on the exercise web page): David Hales, Simon Patarin: *How to cheat BitTorrent and why nobody does.*[1]

Task 1: Game strategies and Prisoners Dilemma

The paper describes the general Prisoners's Dilemma (DM) cooperation strategy.

"Two suspects, A and B, are arrested by the police. The police have insufficient evidence for a conviction, and, having separated both prisoners, visit each of them to offer the same deal: if one testifies for the prosecution against the other and the other remains silent, the betrayer goes free and the silent accomplice receives the full 10-year sentence. If both stay silent, both prisoners are sentenced to only six months in jail for a minor charge. If each betrays the other, each receives a five-year sentence. Each prisoner must make the choice of whether to betray the other or to remain silent. However, neither prisoner knows for sure what choice the other prisoner will make. "

So this dilemma poses the question: How should the prisoners act?

Prisoners dilemma becomes similar to tit-for-tat strategy when it's played repeatedly. Would prisoners' behaviour change when they are given the opportunity to punish the other prisoner for previous non-cooperative play? The player knows that foul play would backfire in the next turn.

	Prisoner A Stays Silent	Prisoner B Betrays
Prisoner B Stays Silent	Each serves six months	Prisoner A serves ten years Prisoner B goes free
Prisoner A Betrays	Prisoner A goes free Prisoner B serves ten years	Each serves five years

Task 2: tit-for-tat strategy

BitTorrent is generally considered to discourage free-riders because of its tit-for-tat strategy. However, the paper presents an alternative explanation:

    b)   What is their hypothesis concerning BitTorrent?

    c)   What are their arguments? Are they plausible?

    d)   Further, what technical and social aspects could found issues implicate to P2P?

References:

[1] David Hales, Simon Patarin. May 2005. How to cheat BitTorrent and why nobody does. Available: [http://www.cs.unibo.it/pub/TR/UBLCS/ABSTRACTS/2005.bib?ncstrl.cabernet//BOLOGNA-UBLCS-2005-12]. Cited 11.07.2007.