Computer Systems Lab
Project Proposal in Concurrent and Distributed Systems 236371
Spring 2015

Cloud Computing meets Game Theory: a malicious RaaS guest agent

Description:

In future clouds, resources such as bandwidth, CPU and RAM are likely to change hands every second using auctions [1]. Auctions are the main selling mechanism in electronic markets such as eBay and Google AdWords. Intuitively, auctions can be regarded as a general tool for modeling resource allocation problems among strategic clients. To this end, each client has an agent, a piece of software that gets guidelines from the client and works on its behalf. The current agent only collects data passively about its surroundings, in a RaaS machine that auctions memory.[2]

In this project, the student will improve the current agent's capabilities for passive data gathering, gather data actively, and utilize it to improve its profits and/or hurt other guets' profits. The student will prove her/his work by throwing the new agents into a battle of performance, and may the best agent win!

Prerequisites:

Operating systems course (or equivalent knowledge). Python.

Advisors: Assaf Schuster, Orna Agmon Ben-Yehuda {assaf,ladypine} at cs.technon.ac.il

Number of students: at least 2 students.

References:

[1] ”The Resource-as-a-Service (RaaS) cloud”, Orna Agmon Ben-Yehuda, Muli Ben-Yehuda, Assaf Schuster, Dan Tsafrir. In proceedings of the 4th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud) 2012.

[2] “Efficient, Non-Cooperative Sharing of Computing Resources”, Orna Agmon ben-Yehuda, PhD thesis. http://www.cs.technion.ac.il/users/wwwb/cgi-bin/tr-info.cgi/2013/PHD/PHD-2013-11, chapters 6-7.