

MASTER'S THESIS

Topic: Aggregation functions for APOLO* topology

Description: For distributed online games global and regional aggregation functions such as *count*, *min*, *max* and *average* may be required. A global *count* might be used to estimate the total number of players in the game which could be used in business for marketing purposes. Functions such as *min* and *max* might be used to perform commercial championships to nominate the best players. The *average* function may be used for estimating the average online time per player that can be used in statistics. For calculating the desired functions different techniques can be used. As there may be extremely many concurrent players online a centralized point for gathering the information is not applicable due to scalability issues. It is not a priori evident how these aggregation functions can be evaluated in the distributed APOLO environment. The purpose of this work will be to analyze existing and develop new techniques that can be applied directly on top of the APOLO topology. This topology which is developed at the Network Computing Laboratory in KAIST uses two-hop two-dimensional location information at every node to stay connected with the closest neighbor in every quadrant. The behavior of this P2P network is close to a wireless ad-hoc network even though it acts on the fully connected internet. The results found may be of high importance for future decentralized online games to resolve scalability problems.

Starting date: January 10, 2005

Student: Patrice Müller
Rütistrasse 2
CH-8636 Wald
Switzerland
patrice@student.ethz.ch

KAIST mentor: Prof. Junehwa Song
Network Computing Laboratory
Division of Computer Science, Department of EECS, KAIST
373-1 Gusung-dong, Yusung-gu, Daejeon
305-701, Republic of Korea
junehwa@kaist.ac.kr
<http://nclab.kaist.ac.kr/>

ETH supervisor: Prof. Roger Wattenhofer
Office ETZ G61.4
Gloriastrasse 35
ETH Zurich
CH-8092 Zurich
Switzerland
wattenhofer@tik.ee.ethz.ch
<http://dcg.ethz.ch/>

* (Ad-hoc Peer-to-Peer Overlay network for MMOGs) Similar to MANET, each node has peer to peer links only to the nearest neighbor on each quarter-plane in the two-dimensional virtual world. These nodes are self-organized by calculating the distance among nodes in the dynamic virtual world. This overlay network is specifically designed for future Massively Multi-player Online Games.