When: Sunday, December 2, 12pm
Where: 37-202
Who: Sergey Nikolenko, Laboratory of Mathematical Logic of the St.-Petersburg Department of the Steklov Mathematical Institute and the Bioinformatics Lab of the Academic University.
Title: FIFO Queueing Policies for Packets with Heterogeneous Processing: How Laziness Proves Upper Bounds

Abstract: FIFO Queueing Policies for Packets with Heterogeneous Processing: How Laziness Proves Upper Bounds

Modern network processors (NPs) increasingly deal with packets that require heterogeneous processing. We consider the problem of managing a bounded size input queue buffer where each packet requires several rounds of processing before it can be transmitted out. The goal of admission control policies is to maximize the total number of successfully transmitted packets. Processing order can have a significant impact on the performance of buffer management policies even if the order of transmission is fixed. We introduce a new class of policies (semi-FIFO, with lazy policies being the most important innovation) and prove lower and upper bounds on the competitive ratio of these policies. Further, we conduct a comprehensive simulation study that validates our results.

In the talk, I will present results of the following papers.