Subject: David Jurenka

Dear Prof. Beneš,

In 2008-2009, David Jurenka was studying at Durham University, Department of Computer Science, as an Erasmus student, at that time I was teaching there. I supervised Jurenka’s CS project entitled “Upper Bounds for (k,s)-SAT”. This work included theoretical studies as well as some computer experiments.

In his thesis, Jurenka obtained several theoretical results. For instance he could find a so called “(3, 4)-SAT enforcer” that is smaller than the smallest known one. This resulted in the improvement on the inapproximability factor for MAX-(3, 4)-SAT, where (k,s)-SAT is the satisfiability problem restricted to CNF formulas where every clause contains k different literals and every variable occurs in at most s clauses. In order to show the minimality of this enforcer, Jurenka established a general lower bound on the size of (k,s)-CNF enforcers. He also considered the connection between (k, s)-SAT and the problem of 2-colourability for hypergraphs, and he disproved some recent results of a Chinese research group on the lower bounds for (k, s)-SAT, which where obtained by techniques used in the hypergraph colourability theory. Jurenka complemented the theoretical results with a clever implementation on a network of parallel computers.

I was very happy with the outcome of the project. In fact, the quality of the thesis and the implementation where far beyond of that what is expected from good students at Durham University. I marked the work with %85 percent which, in the Durham marking scheme, means “outstanding” (75 % is sufficient for a first degree).

Sincerely yours,

S. Szeider

Vienna, September 1st, 2011