Equiloaded Automata

Ivan Kováč
UK, Bratislava, Fakulta matematiky, fyziky a informatiky

In this paper we initiate the study of balanced use of resources in computations. We consider a particular model of computation — deterministic finite automata — and take states as the resource to be used in a balanced way. In this setting we develop notions and prove results which we believe can serve as an example for similar studies in other settings. We present three possible approaches to define an *equiloaded* deterministic finite automaton — a strict equiloadedness, an equiloadedness and an equiloadedness on sequences of words — and analyze corresponding families of automata and languages.

We show a characterization of the family of languages for which there is an strictly equiloaded automaton. We define a set of transformations that preserve the equiloadedness of an automaton. We analyze the influence of different orderings of words to equiloadedness ratio for the equiloadedness on sequences of words.

The paper is meant to be the author's master's thesis.