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Complexity of Boolean functions

SS 2015

Homework 6

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Exercise 1:

Consider the proof of Theorem 3.8 of the lecture.

- a) Show that setting a_0 to 0 eliminates those s_0 \wedge -gates where the outputs f_i with $f_i = a_0 b_j$ for a j are computed.
- b) Show that all implicants of the output of an \vee -gate between a_0 and a suitable gate contains the variable a_0 .

Exercise 2:

Consider the construction of the network β_1 from the network β_0 for the convolution as presented in the lecture. Prove that after the realization of an \wedge -gate u , the properties i) – iii) are fulfilled for the network δ_u .

Exercise 3:

Consider the construction of the network β' from a monotone network β which computes the function $f \in M_n$ as presented in the lecture. Show that β' computes the set $A(f)$.