

Review

Ph.D. Candidate : Ing. Zdeněk Vašíček, FIT, VUT Brno

Dissertation Topic: Acceleration Methods for Evolutionary Design of Digital Circuits

General

Digital Circuits are extremely important in nowadays technologies and are very helpful in the industry. Various circuits are used for various applications, for example in control, medicine, image processing etc. For this reason the question appears as to which way can be digital circuit accelerated in order to get better performance and consequently to get bigger profit in the case of industrial applications. Many papers have been written on this theme for that very important reason.

Content and structure

The doctoral dissertation discusses acceleration methods for evolutionary design of digital circuits from a theoretical as well as practical viewpoint. The thesis consists of 8 chapters including discussing evolutionary hardware; analogue and digital circuits design of nonlinear image filters etc. The thesis also contains results of candidate's research in the form of very good publications.

Based on the state of art, it can be stated that the selected topic represents a well-known and properly investigated area of evolutionary design of digital circuits.

Formal quality and defined aims

The quality of the candidate's thesis can be evaluated from a graphical and formal point of view. In the graphical point of view it can be stated, that the level of quality is very good, Aims are clearly defined in thesis.

Selected topic and methods

In the thesis, the candidate used rigorous and theoretical methods and its research follows standard scientific processes.

Question and remarks

In the proposed thesis I would have following questions and suggestions (as discovered during review):

1. In your thesis is used CGP. Beside this another methods are there. Can you describe-estimate what performance would show those methods when compared with your approach?
2. In the background of CGP is less or more running kind of GA. Did you tried to use another algorithms like differential evolution and the others?

Conclusion

I have to state that the Ph.D. thesis, proposed by candidate Ing. Zdeněk Vašíček meets scientific criteria. According to my opinion, the proposed thesis is suitable and fully meets criteria for defence process.

My conclusion is that I recommend proposed thesis for defense.



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