

Příloha 6: Posudek oponenta habilitační práce

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Habilitační práce Knowledge Management and New Paradigm of Advanced Machine Learning

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Text posudku (rozsah dle zvážení oponenta)

Habilitation thesis “Knowledge Management and New Paradigm of Advanced Machine Learning“ by Dr Parag Kulkarni has been submitted as a cumulative work consisting of fifteen-page long commentary (ten pages net) binding together nine papers that have already been published by the applicant/habilitand.

The outcome of the work presented concerns holistic learning and knowledge management. The author claims to present a new paradigm for holistic machine learning suitable for building smart systems and societies. This claim is rather bold and hardly supported explicitly in the subsequent paper results, even though each individual piece of work does have merit of its own. The “holistic” perspective may be implied by the general scope of the applicant’s work, nonetheless I don’t really believe that it is present as a verifiable feature.

The same reservation concerns knowledge management as such. First, the claim that knowledge management is a research outcome of habilitand’s research is clearly an overstatement. Knowledge management as such exists as a (sub-)discipline independently of applicant’s work, and surely predates it. Even when restricted not to knowledge management as such, but a particular framework for it, there is no comprehensible treatment of knowledge management as such within the papers assembled.

When it comes to individual results, there are eight papers and one patent covering issues of semi-supervised or unsupervised learning ranging over very diverse set of applications from intrusion detection to text classification. I don’t think there is a problem with individual contributions (even though I would have reservation concerning inclusion business method patent into the set of results – both from the viewpoint of patent being a tool restricting the use of knowledge rather than enriching it, and because of the fact that business methods are actually not patentable in the Czech Republic, so the “result” actually does not apply in the country where the habilitation thesis has been submitted), but the overall envelope (fifteen pages of introduction/summarization) within which they are presented as thesis is in my view inadequate.

The introductory text clearly did not go through much language proofing, even though formulations on the edge of comprehensibility occur only infrequently (e.g. work on evolution of clustering algorithm where merely development is meant). The text itself is extremely poor

in really explaining terms used, e.g. "ensemble learning" suddenly occurs in the text without any specification of the concept, and actually without its use elsewhere in the text or in the papers referred. Much of the work concerns semi-supervised learning, nonetheless outline of the concept which would at least remotely match that of Xiaojin Zhu is conspicuously missing. In some cases, there is a clear mismatch between the commentary and the contents of the paper concerned, e.g. a short survey paper 1 described as a work actually building a new model on which subsequent work had been based. If such a text were submitted as a student term project, I believe that it deserved returning back for rewriting. I have a problem with accepting this as a habilitation thesis, no matter what the quantity and extent of the habilitand's actually is. I simply don't believe that a qualification involving also teaching credentials may be based so weakly.

Had it not been for the commentary text, the work presented and overall focus would be quite interesting with a promise of further work by the applicant, and students supervised by him. Formal as they may be, requirements for the habilitation procedure assume both research and teaching skills, and latter cannot be in contradiction with the only part of the habilitation thesis to which it applies. This is a matter of self-containment of the commentary rather, not an objection to the work presented in the set of papers. As a habilitation thesis, this nonetheless does not qualify. While stating this, I have to say that I do not understand why the applicant chose to glue together very diverse set of papers written with co-authors, while he presenting book of his own already published (item 20), would have fulfilled the requirement of the habilitation procedure much easier, and clearly objections for clarity or self-containment, if ever applicable, have already been solved and cleared while preparing the manuscript for viable book publication with Wiley. I would strongly suggest to resubmit the habilitation with this book as a habilitation thesis and the list of papers/research/patents as a material accompanying author's CV, not as an assembly aiming to serve as a habilitation thesis.

Dotazy oponenta k obhajobě habilitační práce (počet dotazů dle zvážení oponenta)

1. On a concrete level of techniques used and/or what are the features substantiating the "holistic" claim, making it verifiable/refutable?
2. Compare the quality of "smartness" when it comes to systems and when it comes to businesses or even societies. Are there concepts being directly shared among these levels of abstraction?

Závěr

Habilitační práce Paraga Kulkarniho „Knowledge Management and New Paradigm of Advanced Machine Learning“ *nesplňuje* požadavky standardně kladené na habilitační práce v oboru Informatika.

Brno, 29. 10. 2013



Jiří Zlatuška