

**FROM FORMAL SPECIFICATION TO FULL PROOF:
A STEPWISE METHOD**

by

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Abstract

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Acronyms

ZCGa Z Core Grammatical aspect.

ZDRa Z Document Rhetorical aspect.

Chapter 1

Conclusion and Future Work

In this chapter we discuss the current development of MathLang framework for Z specifications (ZMathLang) and it's future works. We also conclude a comparisson between ZMathLang framework to other ststems. Finally in section we give add concluding thoughts to this thesis.

1.1 ZMathLang Current and Future Developments

1.1.1 Current Developmets

The research on ZMathLang was started in 2013 and provides a novice approach to translating Formal specification to theorem provers. With this approach the gradual translation of the formal specification document is made via "aspects". Each aspect checks for a different type of correctness of the formal specification and output different products in order to analyse the system. Moreover, the annotation of the formal specification document should not require any expertise skills in the language of the targatted theorem prover. The only expertise needed for the annotations include the expertise of the formal specification document.

The ground basis of the MathLang framework for mathematics (MathLang) framework were studied by Maarek, Retel, Laamar and various other master and undergraduate students under the supervision of F.Kamareddine and J.B. Wells. This thesis presents the ground basis of the ZMathLang framework which uses the

methodology of the MathLang framework. The ZMathLang framework has taken the idea of breaking up the translation path from a document into a theorem prover and taking it through a grammar correctness checker, a rhetorical correctness checker, a skeleton into a proof. All the theory and implementation of the ZMathLang aspects have been developed and described in this thesis.

1.1.1.1 Other Developments

An extension to ZMathLang has started being developed by Fellar [?], [?] which takes the concept of ZMathLang and adds object orientatedness to it. With this, ZMathLang has the potential to translate not only Z specifications but object-Z specifications as well.

and has been developed and expanded with a user interface [1], [?]

1.1.2 Future Developments

1.1.2.1 Automisation of the annotation

1.1.2.2 Extension to more complex proof obligations

1.1.2.3 Any formal specification to any theorem prover

1.1.2.4 Informal specifications

1.2 Related Works

1.3 Conclusion

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Bibliography

- [1] M. Mihaylova. Zmathlang user interface user manual. 2015.