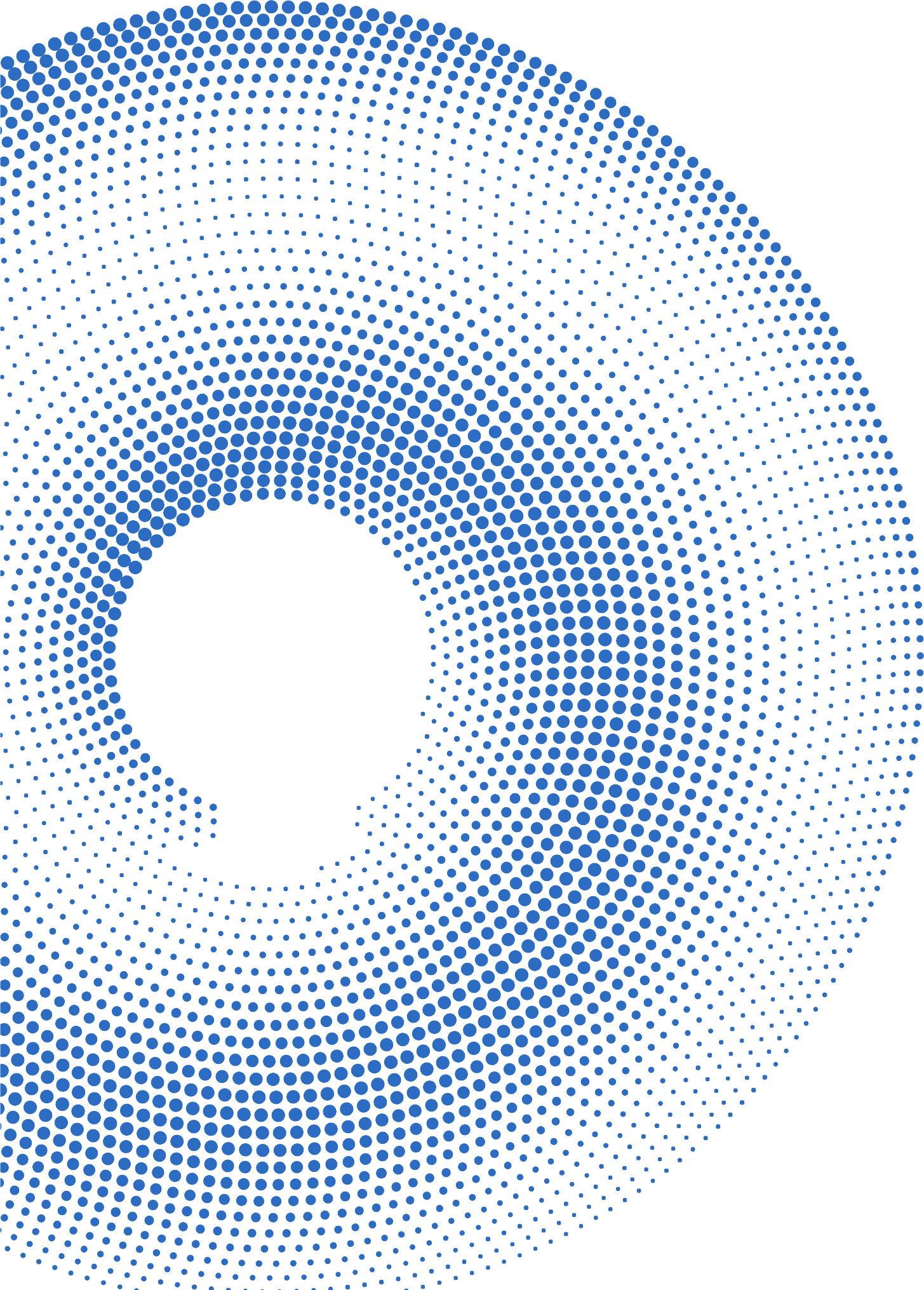
DEPARTMENT OF COMPUTER SCIENCE



**DANIEL GONÇALVES FUSETA ROSA MACAU**

**INTERACTIVE TOOL FOR PRACTICING AND EVALUATING LOGIC EXERCISES**

MASTER IN COMPUTER SCIENCE

NOVA University Lisbon

⟨February⟩, ⟨2022⟩

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Abstract

Nowadays

Keywords: Classical Propositional Logic, Massive Open Online Courses, Learning Man- agement Systems, Online Learning, Learning Tools Interoperability

resumo

Nos

Palavras-chave: Classical Propositional Logic, Massive Open Online Courses, Learning Management Systems, Online Learning, Learning Tools Interoperability

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1

Introduction

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Background

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Proposed Work

Iltis Web-Based System for Teaching Logic:

Iltis is an interactive online tool designed to help people learning logic from scratch. The goal of this tool is to provide a system that supports a big variety of content (propositional logic, modal logic and first-order logic) and a valuable feedback system that helps the learner to better understand it’s mistakes. This application is divided in multiple sections (for each content). Each section comprises with a set of tasks (exercises) that increase in difficulty. For each kind of task, this application provides custom feedback generators, this feedback can vary depending on the mistakes made by the learner. Some tasks count with different levels of feedback that may differ based on the learner’s proficiency, low feedback levels provide a vaguer hint and the high ones a more precise and explicit hint. From the teacher’s perspective this framework provides a way to create more tasks, this can be achieved by using an XML file where teachers need to specify a set of tasks and for each task the type of exercise and a list of feedback generators to present to the learner. It is possible to associate more than one feedback generator to the task creating different levels of feedback. Some exercises have feedback generators that were built using reversion rules, allowing a better and more accurate feedback. These rules were created based on the list of the most common errors among learns. For example: one common mistake in the “Propositional Formulas” exercises is to switch the order of the antecedent and consequent of implications, so there’s a rule for that, whenever a learner switches the two parameters it generates feedback indicating that something is wrong near to the implication.

A screenshot of a computer

Description automatically generated

List of tasks available in Iltis

There are some positive aspects to consider from this system when developing our own tool, such as the intuitive way (it presents a low learning curve, and it is fundamental on these kind of tools) that the exercises are presented to the learner, the advanced feedback system and the easy access to the tool. It also provides a vast set of exercise types and a modular way to create them. On the other hand, teachers need to specify tasks in XML, and this require some extra knowledge. Some types of exercises are still missing in this tool like the deduction tree prove. Also, this project was developed for a German University, and it isn’t opensource so we can’t use it to expand to a better version.

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Proposed Solution

# Bibliography

