JOHANNES KEPLER
UNIVERSITÄT LINZ

Bachelor's Thesis
A Markdown-To-Interactive-H5P-Book Converter

Student: Elias Gierlinger
Advisor: Dipl.-Ing. Dr. Markus Weninger, BSc
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Dipl.-Ing. Dr. Markus Weninger, BSc
Institute for System Software
T +43-732-2468-4361
markus.weninger@jku.at

Background and Motivation

H5P is a popular open-source framework for creating interactive learning content that can be seamlessly embedded into learning management systems (LMS) such as Moodle. One of its most powerful content types is the "Interactive Book," which allows educators to group various types of content (text, images, videos, and quizzes) into a structured, multi-page format.

However, creating these books manually through the H5P web interface is often cumbersome and time-consuming. On the other hand, many educators and developers already maintain their teaching materials in Markdown and host them on platforms like GitHub to leverage version control and collaborative editing. Currently, there is a gap between the efficiency of Git-based content creation and the interactive student experience provided by H5P. Bridging this gap would allow educators to manage their content in a central repository while providing students with rich, interactive books.

Objective

The primary objective of this bachelor's thesis is to design and develop a converter tool that transforms Markdown files hosted in a public GitHub repository into a fully functional H5P Interactive Book package.

The user will provide a link to a public GitHub repository containing the Markdown files (where each file represents a chapter). The tool will automatically fetch these files, parse them, and generate an `.h5p` file that can be uploaded to an LMS. Furthermore, the tool should allow users to manually re-trigger the conversion process to reflect updates in the repository. As a nice-to-have feature, the tool should support an auto-rebuild mechanism that detects changes in the GitHub repository and updates the book automatically.

Specific Tasks

To achieve these goals, the student will:

- **Analyze H5P Structure:** Investigate the internal structure of H5P Interactive Book packages, specifically the `h5p.json` and `content.json` files, to understand how chapters and content are represented.
- **GitHub Integration:** Implement functionality to fetch files from a provided public GitHub repository URL (e.g., using the GitHub API or shallow cloning).
- **Develop a Markdown Parser & Converter:** Implement or integrate a parser to extract content from Markdown files and convert them into H5P-compatible HTML. This includes handling the "One file per chapter" logic and preserving the structural hierarchy (headings, lists, code blocks).

- **Package Generation:** Implement the logic to bundle the converted content into a valid `.h5p` ZIP archive, including all necessary library references and configuration files.
- **Frontend/Interface:** Develop a user-friendly interface where users can input the GitHub URL, trigger builds, and download the resulting H5P book.

Non-Goals

- **Creation of New H5P Content Types:** The goal is to utilize the existing "Interactive Book" type, not to develop a new H5P library from scratch.
- **LMS Integration:** The tool should produce an exportable file; direct API integration into Moodle or other platforms is out of scope.

Skills to be developed

During this thesis, the student will gain experience in:

- Web technologies including **PHP**.
- Parsing and transforming structured data formats.
- Understanding the architecture of modern educational software and the H5P ecosystem.

Modalities:
The progress of the project should be discussed at least every three to four weeks with the advisor(s). A time schedule and a milestone plan must be set up within the first 2 weeks and discussed with the advisor(s). It should be continuously refined and monitored to make sure that the thesis will be completed in time. The final version of the thesis must be submitted not later than 31.12.2026.