

Towards a Platform for Modular, Open, Reusable Textbooks

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MOTIVATION

Teachers with proper CS education and **teaching resources**: key factors for successfully teaching CS for all
But **current textbooks**: monolithic and static.
Transition to **modular** and **editable** with inspiration from source-control management tools à la Git
All content always **publicly available** with automatic per-line **author tracking**
User-friendly, WYSIWYG/M frontend; **powerful tools** in backend

USER INTERFACE & FRONTEND

Automatic table of contents

Insert, delete, move sections around

Fully responsive layout, incl. edition

Animations (SVG + JS)

User-friendly, intuitive web interface

Learning objectives: grouped automatically per section; highlightable

Double-click paragraph to edit; click *Render* to save & publish (possibly new fork)

Integrated, autocorrective code exercises

LANGUAGE & FILES

Simple, well known markup: Markdown

Simple text files favour sharing, version control, “blame” view

Syntax for plugins, à la Gitbook

BACKEND

Every edition of a book has its own full Git repo: revisions, branches, forks

Frontend changes generate new revisions in backend

For power users: can manage through terminal, integrate in custom workflows

Use favourite text editor & tools

FUTURE

Student result tracking; summary **statistics** per exercise
Version comparison, word by word, with inline visual “diff” tool
Notifications of activity around modified text by other authors as incentives for **author engagement**

REFS

[1] Bruillard, É.: Les manuels scolaires questionnés par la recherche. Manuels scolaires, regards croisés pp. 13—36 (2005)
[2] Hubwieser, P., Magenheimer, J., Mühling A., et al.: Towards a conceptualization of pedagogical content knowledge for computer science. In: Proceedings of the ninth annual international ACM conference on International computing education research. pp. 1—8, ACM, (2013)

[3] Bruillard, É., Baron, G.L.: Vers des manuels scolaires électroniques? Résultats d’une étude en mathématiques en classe de sixième. Sciences et techniques éducatives 5(4), 343—370 (1998)
[4] Schiper, A.: Découvrir le numérique: une introduction à l’informatique et aux systèmes de communication. Presses polytechniques et universitaires romandes (2016)

