

Preface

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Textbooks and instructional texts in general remain one of the main methods of instruction, but – just like other educational tools – they have been evolving over the last several decades in many aspects (how they are created, published, formatted, accessed, and maintained). Most textbooks these days have digital versions and can be accessed online. Plenty of textbooks (and similar instructional texts, such as tutorials) are freely available as open educational resources (OERs). Many commercial textbooks come with libraries of supplementary educational resources or even distributed as parts of online educational services built on top of them. The transition of textbooks from printed copies to digital and online formats has facilitated numerous attempts to enrich them with various kinds of interactive functionalities including search and annotation, interactive content modules, automated assessments and more.

As a result of these enrichments, new research challenges and opportunities emerge that call for the application of *artificial intelligence* (AI) methods to enhance digital textbooks and learners' interaction with them. There are many research questions associated with this new area of research; examples include:

- How can one facilitate the access to textbooks and improve the reading process?
- How can one process textbook content to infer knowledge underlying the text and use it to improve learning support?
- How can one process increasingly more detailed logs of students interacting with digital textbooks and extract insights on learning?
- How can one find and retrieve relevant content “in the wild”, i.e., on the web, that can enrich the textbooks?
- How can one better understand both textbooks and student behaviors as they learn within the textbook and create personalized learner experiences?

Our workshop series seeks research contributions addressing these and other research questions related to the idea of intelligent textbooks. While the pioneer work on various kinds of intelligent textbook technologies has already begun, research in this area is still rare and spread over several different fields, including AI, human-computer interaction, information retrieval, intelligent tutoring systems, and user modeling. We hope these workshops bring together researchers working on different aspects of

intelligent textbook technologies to establish intelligent textbooks as a new, interdisciplinary research field.

The 2020 workshop themes included but were not limited to:

- a) Modelling and representation of textbooks: examining the prerequisite and semantic structure of textbooks to enhance their readability;
- b) Analysis and mining of textbook usage logs: analyzing the patterns of learners' use of textbooks to obtain insights on learning and the pedagogical value of textbook content;
- c) Collaborative technologies: building and deploying social components of digital textbooks that enable learners to interact with not only content but other learners;
- d) Generation, manipulation, and presentation: exploring and testing different formats and forms of textbook content to find the most effective means of presenting different knowledge;
- e) Assessment and personalization: developing methods that can generate assessments and enhance textbooks with adaptive support to meet the needs of every learner using the textbook;
- f) Content curation and enrichment: sorting through external resources on the web and finding the relevant resources to augment the textbook and provide additional information for learners.

While we did not receive submissions addressing all of these topics, the number of submitted papers was sufficiently large and the diversity of topics was more than enough to represent the emerging field as a whole. After a thorough reviewing, where each submission was reviewed by three to four members of the reviewing committee, which included workshop organizers and PC members, we selected seven papers for long presentation and two papers for the short presentation. In the workshop program, we combined the papers into three thematic sessions:

- Textbook analysis and representation;
- Textbook analysis and enrichment;
- Textbook adaptation.

In addition to traditional paper presentations, this year, the workshop accepted nine demo presentations. This helped make the workshop program more interactive, which was a welcomed arrangement especially considering the online nature of the 2020 workshop. Overall, the focus of the workshop was slightly different from the previous year. The program of the 2019 workshop focused more on such HCI issues as adaptation, and interactivity. This year, more papers were concerned with (semi)automated analysis of textbook content and structure, extraction of knowledge, integration of textbooks with other educational systems. We are looking forward to see which trends will characterise the next years of this workshop series.

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