Loki
technology & knowledge for interaction

Interactive systems for the collaborative authoring, refinement and reuse of scientific presentation materials

Duration : 36 months
Team : Loki (Inria centre at the University of Lille & CRIStAL)
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Location : Inria Centre at University of Lille (Villeneuve d'Ascq)
Deadline : 30/04/2026

The Loki group is looking for a PhD student in fall 2026. This PhD will investigate how interactive systems could better support the collaborative authoring, refinement and delivery of scientific presentation materials.

Description of the PhD

Summary

The objective of this PhD is to propose new paradigms of interaction and design guidelines for interactive systems that better support the collaborative production of scientific presentation materials (slide-decks), not only their *authoring* but also their *refinement* and *reuse*.

Presentations are one of the main communication medium, typically used by researchers during conference events, lab visits, popularization and job interviews. Authoring these presentation is not only a long process, but it also relies on collecting feedback from collaborators, or may require to integrate presentations previously produced by them.

The PhD will explore this process in detail, design novel systems that facilitate the collaborative initial authoring of presentations, propose contextualized feedback collection systems that will better integrate in the workflow of authors/presenters, design dedicated rehearsal systems, and reflect on file structures that can better accommodate this collaborative process.

Context

Every year, an increasing number of presentation materials, such as slide-decks, are produced to be delivered at various events like scientific conferences [1], which is essential for disseminating scientific results. These presentations are typically the result of a group effort that requires coordination and adaptation. Usually, a first draft of the presentation is produced. This first draft, that may or may not rely on previously produced presentations, is then iteratively refined by collecting feedback from co-authors and other colleagues. This feedback collection can happen at different stage, on various form of materials. Among others, it can be by early (a) on the plain text speech, (b) on a spreadsheet with description of the visuals on the side, (c) on a potentially incomplete slide-deck, (d) on screen recording of the presentation with a voiceover, or (e) actual recording of a presentation in context. Current systems are not adapted to collecting these feedback, fail to contextual them into the actual presentation materials and their precise versions, and do not facilitate authors to implement the corresponding changes.

Problem space

Several presentation textbooks characterize the entire presentation production process into distinct phases, such as planning, building and delivery [2,3,4,5]. Yet, this characterization relegate feedback collection and refinement within the building phase. Similarly, while systems have been proposed to both facilitate the planning [6] and authoring [7] of presentations, as well as making delivery more interactive [8], they fail to tackle

the problem more holistically and do not integrate co-authors and collaborators feedback into the process, nor consider situation where presentations build on top of presentations they previously produced.

Nowadays, the trend in system design for presentations consists in lightening the burden of building presentations by automatically generating them [9,10,11]. This approach is largely motivated by the fact that producing presentation materials is seen as a tedious task that takes time to articulate and aggregate materials. Yet, they are wrong to assume that a quality presentation can be automatically generated without requiring authors to make this presentation their own, something that inherently happen while authors are designing and refining them. Moreover, they typically ignore the specificities associated with scientific communication that might require the integration of certain types of materials, or adapt the level of discourse to the audience.

We see the production of presentation materials radically differently. We believe that the production is tedious because software tools have barely evolved in the last decades, beyond cosmetic updates. They do not accommodate how presentation are produced nowadays, that is, largely collaboratively and iteratively.

Objectives

This PhD will be articulated around the three following objectives.

Characterize the collaborative production process of scientific presentations. A first objective is to characterize more finely the current workflow of scientific presentation production, beyond the planning, building, delivery phases. We will conduct surveys and interviews with collaborators to better understand their respective role in this process. We will notably explore the context of co-authoring where more than one author will present, typically co-first authors of papers. We will also explore the longer lifecycle of presentations, where parts of presentations from collaborators are re-used for future presentations, typically when a Professor aggregates the work of supervised students in a novel research talk.

Design collaborative presentation production systems. A second objective is to design collaborative systems that facilitate the authoring and refinement of scientific presentations. We will go beyond simple collaborative slide-decks [12,13] and reflect on systems that facilitate the collaborative authoring of polymorphic and interactive multimedia documents [14,15], the collaborative refinement of speech and visuals, and situations where authors reuse [16] previous presentations from collaborators. We will also design novel rehearsal and situated feedback collection systems that will make it easier to collaborators and external feedback provider to provide feedback on different versions of the presentation, depending on the time they can dedicate to it.

Reflect on structures for facilitating advanced collaborative presentations. A third objective is to reflect on file structures that facilitate the collaborative authoring, refinement and delivery of scientific presentations. It will target potential issues such as handling collaborative edits and undos, but also reflect on which structure would be appropriate to accommodate live co-presentations from different computers. We will leverage existing theoretical concepts such as interaction and graphical substrates [17,18,19] as basis for this work.

Candidate

The candidate must have (or be about to obtain) a Master's degree or equivalent in Computer Science or Human-Computer Interaction, and demonstrate a strong interest in research. They should have experience and a strong interest in interactive software development and design, and strong programming skills, in particular in web-based technologies. Creativity, independence, team spirit and communication skills are valuable assets. Proficiency in technical and scientific English is also required. The candidate will join a vibrant and multicultural group of young researchers at Loki. Our students typically come from different backgrounds (Canada, China, India, Iran, ...). Speaking French is not a requirement to fit into our research group.

To apply, send your resume and a cover letter by email to Sylvain Malacria (sylvain.malacria@inria.fr) with [Application: Interactive systems for the collaborative authoring, refinement and reuse of scientific presentation materials] as object of the e-mail. In addition to what is generally expected, the cover letter should highlight what you find particularly interesting in this topic, why current solutions are limited, as well as describe your overall vision for this project. Ideally, it should also elaborate on why you are interested in working in academic research. All applications are welcome, regardless of age, gender, social or ethnic origin, sexual orientation, or disability. For the integration of people with disabilities, we are working on possible adaptations of the positions to be filled - within the limits of the applicable rules for the safety of people: do not hesitate to contact us to tell us about your situation.

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