

## 1 Organizers and Audience

Joseph E Michaelis is an Assistant Professor of Computer Science and Learning Sciences at the University of Illinois at Chicago. His work focuses on developing educational technologies to improve interest in STEM. He has been an avid LaTeX and Overleaf user, and has used these tools to submit numerous conference papers including ACM CHI, Interaction Design for Children, and ISLS 2021. Dr. Michaelis is co-author of the ISLS LaTeX template.

JooYoung Seo is a doctoral candidate in Learning, Design, and Technology program at Penn State, and RStudio-certified data science instructor. His research involves accessible computing and multi-modal data representation for learners with and without (dis)abilities. He was interning on both RStudio IDE and Shiny (interactive data interface) team at RStudio in summer 2020. He is a developer and maintainer of the `islsdown` (R Markdown) package.

Proposers/Organizers' names, affiliations, contact information, and backgrounds, including prior experience in conducting such events

### 1.1 Intended Audience

We believe this tutorial would be helpful for all ISLS participants who plan to submit papers to future ISLS. The use of the LaTeX and Overleaf templates would be especially helpful for those who want to improve the quality of the formatting for their ISLS submission, feel the existing Word template is difficult to work with, or would like a better tool for collaborative writing. The use of the RMarkdown would benefit those who wish to integrate their data analysis into their writing to improve the reproducibility and transparency of their work, and those who would like to make that work available in more accessibility-friendly formats.

### 1.2 Duration of Event

This tutorial will be scheduled as a half-day event with two main components and a short break. Our format will be capable of running the tutorial online, and the remote participation will help to highlight the utility of these tools for collaborating.

## 2 Theme and goals

The goal is for workshop participants to leave with a paper in either Overleaf, LaTeX, or Rmarkdown. As a theme, throughout the tutorial we will weave in what we believe are the four main advantages of using computational word processing approaches: crisp formatting, collaboration, reproducibility, and accessibility.

## 3 Theoretical background and relevance to field and conference

A number of theoretical ideas are relevant to the focus of this workshop; the first is reproducibility. Scholars have argued that reproducibility should be a *minimal* standard as a means of combating the *replicability crisis* peng11, hedges18. Reproducibility typically involves using tools and software, such as

with ease, as the template takes plain text entry and automatically formats that text to the specifications of the conference, thus reducing the need for additional time spent on typesetting or placement, editing and alignment of figures, tables and references.

## 4 Outline of planned activities

In our tutorial, we plan to engage participants in hands-on activities that enable them to learn to use the Overleaf and R Markdown tools with their own examples. By the end of the tutorial, participants will have converted a previously written ISLS, or other conference paper into the Overleaf and/or R Markdown author tools. Prior to the tutorial event, we will contact participants via email with instructions on how to prepare for the day, including installing required software and packages, creating Overleaf accounts, and selecting an example paper and/or data to work with. The email include a tutorial prep checklist for participants, and contact information if they need help with this process.

During the tutorial, we will introduce the fundamental concepts of LaTeX, Overleaf and R Markdown and answer questions about the benefits of writing with these tools. We will then conduct a demonstration and practice session for OverLeaf, take a short break, and continue with a demonstration and practice session for R Markdown. The demonstrations will include one of our expert organizers walking through the syntax and workflow for typical components of a conference paper such as headings, tables, and references using a User Guide created specifically for the ISLS Overleaf or R Markdown tool. We will then invite participants to practice using each tool by recreating one of their own previously written papers using the tool. During practice, all three organizers will check-in and provide guidance for participants. We will conclude the tutorial with a feedback session for the participants to guide the organizers in improving the tools for future use. Below we outline the three parts of the tutorial event.

### 4.1 Part 1: Introducing the tools

We will begin the tutorial with a brief introduction of the organizers and participants, followed by a brief look at LaTeX, Overleaf, and R Markdown to frame the days work. The introduction take about 20 minutes, and will proceed as follows:

- Introductions for organizers and participants
- Overview of computational word processing
- First look at LaTeX, Overleaf, and R Markdown
- Initial Questions

## 4.2 Part 2: Overleaf

After the introduction, we will briefly demonstrate the process of adding text and common paper elements to Overleaf with a focus on the quality of automatic formatting, professional look, and capacity for collaboration. The demonstration will use a copy and paste method of converting a previous paper, so that the demonstration matches the process participants will engage in. Participants will then utilize our user guide to create their own Overleaf formatted paper with aid from organizers. We will dedicate 10 minutes to the demonstration and 30 minutes to the practice. This portion of the event proceed as follows:

- Demonstration of LaTeX in Overleaf (20 minutes)
  - Basic Text Entry
  - Adding Figures, Tables, and References
  - Compiling and Troubleshooting
- Practice using Overleaf (60 minutes)
  - Access Overleaf template
  - Add basic text from existing paper
  - Add Figure, Table and References from existing paper
  - Compile and download PDF
  - Continue to add additional portions of paper
- Whole group discussion and questions about Overleaf (10 minutes)

## 4.3 Break

Here we will give participants a 20 minute break from the event, and reconvene for Part 3.

## 4.4 Part 3: R Markdown

After the break, we will demonstrate the process of using R Markdown to write an ISLS. We will include some similar aspects to Overleaf, including adding text and common paper elements, with a focus on how this process enhances reproducibility and accessibility. We will include special attention to how data and analysis are embedded in the process, and how to format for accessibility by a variety of reader and/or author needs. We will provide sample data and analysis code for participants who need it. Participants will then utilize our user guide to create their own R Markdown formatted paper with aid from organizers. Again, we will dedicate 10 minutes to the demonstration and 30 minutes to the practice. With 10 minutes added for a whole group discussion. This portion of the event proceed as follows:

- Demonstration of R Markdown (20 minutes)
  - Basic text entry
  - Including data and data analysis code
  - Adding figures, tables, and references
  - Output formats, compiling and troubleshooting
  - Accessibility
- Practice using R Markdown (60 minutes)
  - Access R Markdown template
  - Add basic text from existing paper
  - Import Data, add code to analyze data and output figure or table
  - Output multiple formats
  - Continue to add additional portions of paper
- Whole group discussion and questions about R Markdown (10 minutes)

## 4.5 Part 4: Feedback and Closure

After the demonstration and practice session for R Markdown, we will reconvene as a whole group to solicit feedback from the group on the two tools included in the Tutorial. As the tools are intended to be a useful resource to the ISLS community, we hope to continually improve them over time, and will benefit from the perspective of new users. We will then take time to wrap up the session and give additional help or advice going forward. We will conclude by asking participants to sign up for reminder and update emails for either tool, and share out plan to reach out near the next ISLS deadline to support using the tools. The feedback and closure portion of the tutorial will take 20 minutes.

# 5 Additional Information

## 5.1 materials needed to participate

Participants will need - Existing ISLS paper (or similar substitute) - Access to Rstudio (and dependent libraries) - Overleaf account

# 6 Recruiting Participants

We will solicit participation by...

## 6.1 Draft of call for participation

Have you ever struggled with formatting your papers in accordance with ISLS conference proceedings guidelines? Do you want to seamlessly integrate a part of research analysis (e.g., computational results, figures, and tables) into your paper in a programmatic fashion? Or, would you like to produce your ISLS conference paper in multi-formatted and accessible outputs?

If you say “Yes” to any of these, this tutorial is for you. This half-day event focuses on computational word processing that brings you both reproducibility and accessibility. The three organizers of this tutorial have developed an easy-to-write authoring template tailored for the ISLS conference proceedings.

Based on LaTeX, a publication-quality typesetting system, we have made two options for the ISLS community use: (1) Collaborative writing on Overleaf website. (2) Literate programming using statistical-computing R + Markdown environment.

No background in either LaTeX or R Markdown is required. Participants will learn how to create an reproducible and accessible paper for the ISLS conference submission using the step-by-step computational word processing workflow that the three authors propose. The following includes the core activities that the tutorial will cover:

- Getting started with LaTeX, Overleaf, and R Markdown.
- Inserting texts, figures, tables, and citations.
- Embedding statistical-computing results from R and/or Python.
- Rendering multi-formatted and accessible outputs.
- Compiling and debugging tips.

Participants will be asked to attend this session with some required software dependencies installed on their laptops and to bring either existing or work-in-progress paper content, all of which will be timely reminded via email beforehand.

## 7 Expected outcomes and contributions

The expected contributions of this tutorial is threefold. (1) Maintainability: the ISLS community will be able to have a manageable template archives that are easy-to-update and easy-to-distribute. The LaTeX-based template maintenance has become a widely-accepted standard in many computer science and HCI fields (e.g., ACM). Our proposal of using LaTeX template will not only push the ISLS community in a more universal direction across social sciences and computer science, but also contribute to general maintainability under a

standardized typesettings. (2) Reproducibility: our computational word processing workflow will make it easy for learning scientists to transparently share and replicate analytical procedures. This will allow more reliable reviews and study results that would otherwise used to remain in a blackbox challenging against replicability. (3) Accessibility: the plain-text and multi-formatted nature of R Markdown workflow will greatly benefit the digital accessibility for people with and without (dis)abilities. Screen reader users will be able to easily navigate paper content (e.g., text, figures, tables, and even Math equations) in HTML output, and non-assistive-technology users will also take advantages of having multi-formatted outputs for various use following their own needs.

Taken together, this proposed tutorial will be the first step towards a more universal, reproducible, and accessible template management within ISLS community.