

A Modern Approach to Tutorials

Nika Haghtalab
& Erik Louie

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Outline

New Structure

Non-weekly Tutorials
Different Levels of
Tutorial

Content of Tutorials

Basic Tutorial
Advanced Tutorial

Tools

Latex
Graphviz

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Introducing Changes to Tutorial Structure

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- ▶ Have you ever felt that there is not much to cover in your weekly tutorial?
- ▶ Have you ever noticed that your students need material outside of the lecture content in order to understand the topic well?
- ▶ Have you ever wondered why stronger students stop coming to your tutorials after couple sessions?

Here are some changes that we think can affect our tutorials positively. These changes could be specially effective if they are applied together.

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Offering tutorials once per Chapter

It would be good to have a tutorial once per chapter or section, instead of weekly tutorials. Some benefits of this change would be:

- ▶ More elaboration and focus on the material
- ▶ Higher attendance
- ▶ Ability to compare and connect the material in the whole chapter
- ▶ Less time consuming and more time-efficient, especially for the students

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Offering tutorials in two different levels

Offering tutorials in two different levels could be beneficial:

- ▶ The advanced tutorial is interesting and useful for students with stronger background
- ▶ The basic tutorial provides more practice for students with less background.
- ▶ Students like to have material specialized to their talent and skills.

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As we saw, one of the advantages of having tutorials in two different levels is specializing the material. Here we talk about two different approaches for preparing the content of your tutorial.

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These tutorials should target the needs of students with less background.

- ▶ Focus on the course notes and the slides
- ▶ Prepare lots of examples related to the assignments or exam questions
- ▶ Do not force anything outside of the course content, even if you think it is cool!
- ▶ Provide walk-throughs and sample solutions

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These tutorials should target the needs of students with stronger background.

- ▶ Quickly go through the material covered in the basic tutorial, omitting some of the examples
- ▶ Prepare examples of the real-life applications the content
- ▶ Provide some proofs of the theorem that were mentioned in the class without the proofs
- ▶ Always have 1 or 2 hard questions to keep the students on their toes.

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There are many softwares that can help you prepare your tutorial, but we found L^AT_EX particularly useful because:

- ▶ It is simple and powerful
- ▶ Can import codes, images, graphs and figures easily
- ▶ Very quick once you have learned how to use it
- ▶ Very flexible, it works with many different programs and packages
- ▶ Excellent typesetting, specially if you need to use math symbols
- ▶ It brings you more respect!

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This tool is mainly used for drawing graphs and figures.

- ▶ It is simple
- ▶ No moving and resizing the content is needed, everything is automatic
- ▶ Very pretty typesetting, like coding
- ▶ Automated placement
- ▶ It could be embedded in your \LaTeX code

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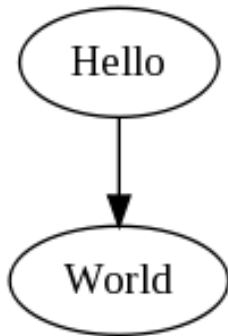
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Advanced Tutorial

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Graphviz Example

```
echo "digraph G {Hello->World}" | dot -Tpng >hello.png
```



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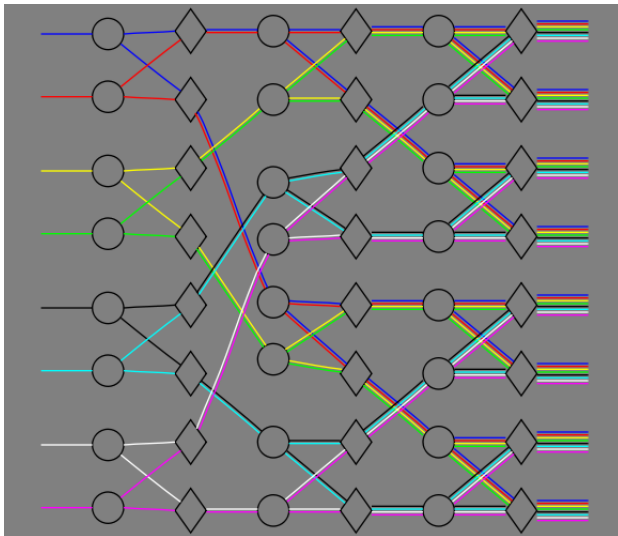
Tools

- Latex
- Graphviz

Graphviz Prettiness - 1

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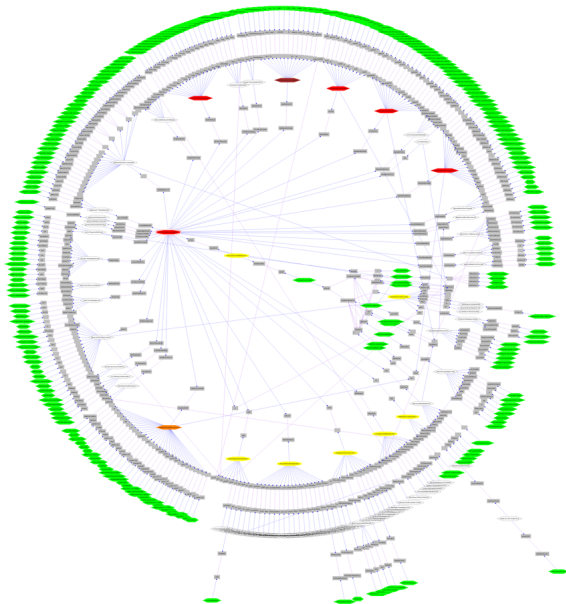
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Graphviz Prettiness - 2



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We hope you enjoyed this presentation.