

Neural Speech Synthesis for Swiss German

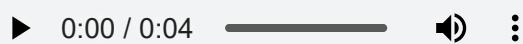
Tobias Bollinger

Introduction

- Take German text and synthesize Swiss German speech
- In different dialects
- Explore different methods

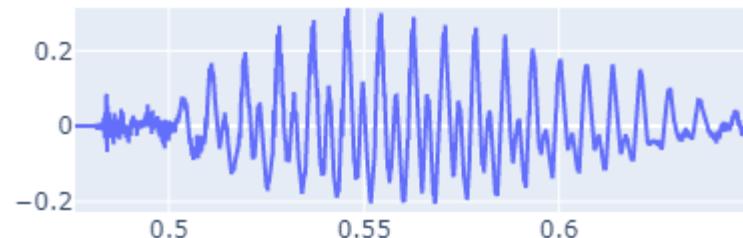
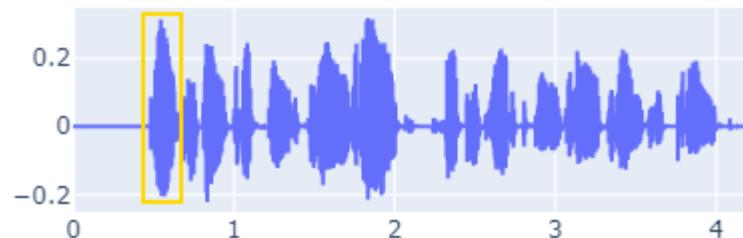
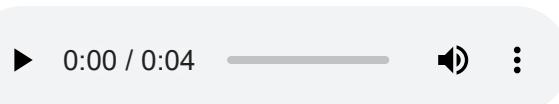
Example

“Tiefsttemperatur 10 Grad, Höchstwerte um 23 Grad.”



Example

“Tiefsttemperatur 10 Grad, Höchstwerte um 23 Grad.”



Fourier transform



Decibel

$$dB = 20 * \log 10(\text{amplitude})$$

Frequency Hz

Number of oscillation per second.

$$f = \frac{1}{T}$$

where T is the time for one oscillation.

Decibel

$$dB = 20 * \log 10(\text{amplitude})$$

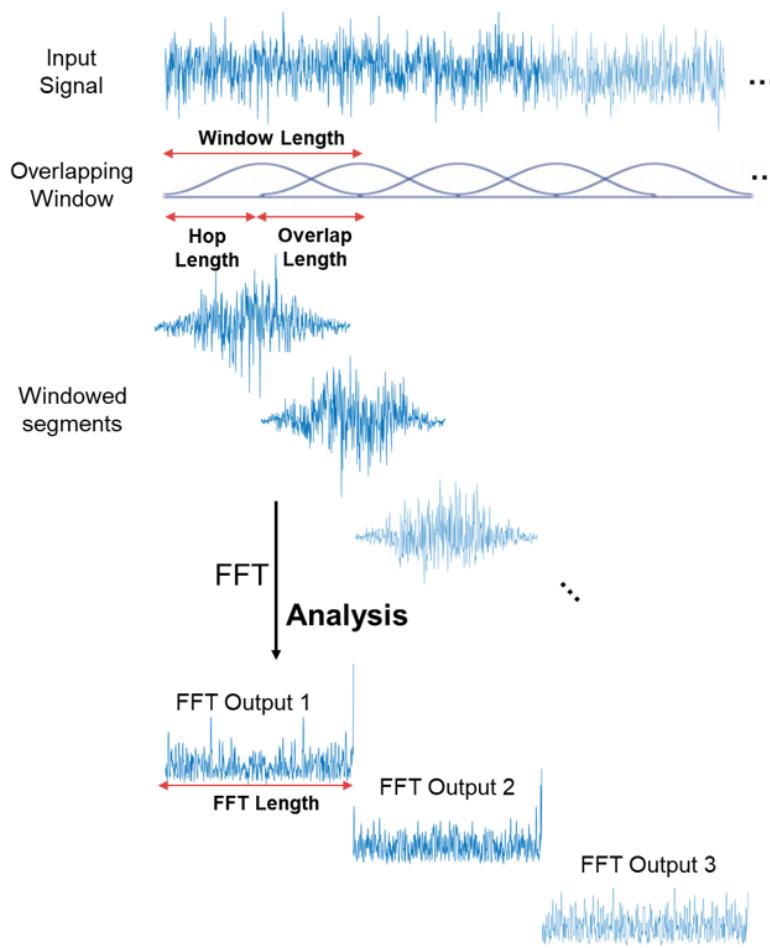
- **60 dB** Normal conversation
- **105 dB** Bulldozer
- **140 dB** Jet engine at takeoff

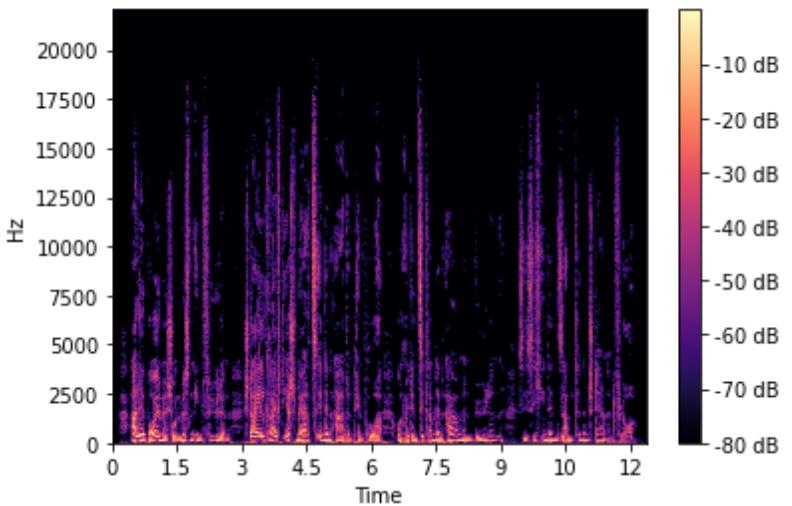
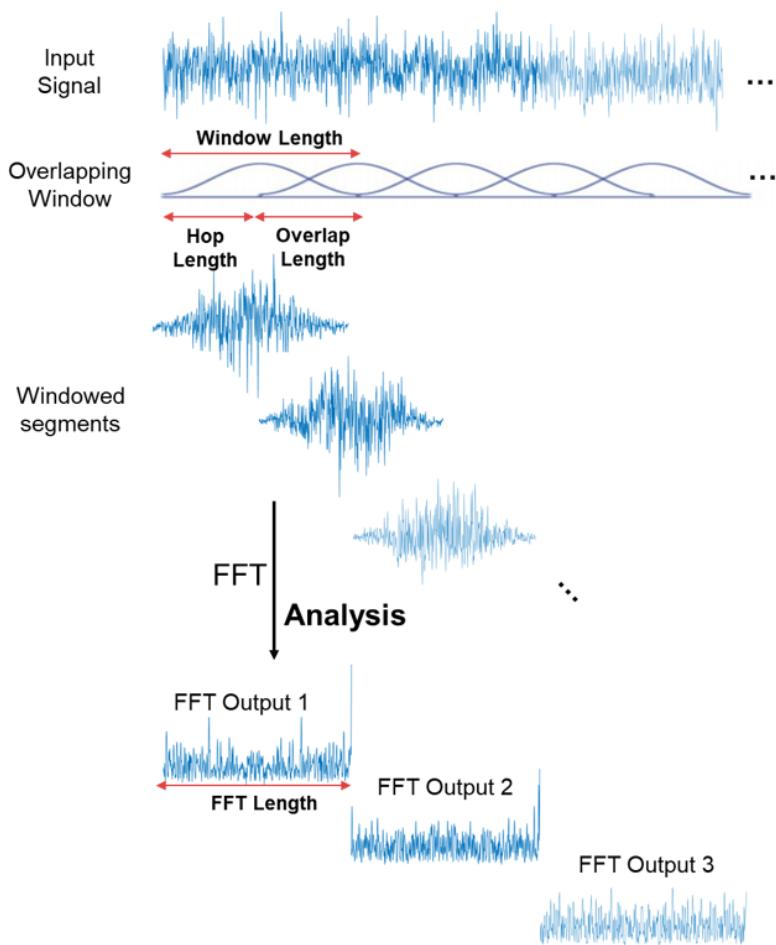
Frequency Hz

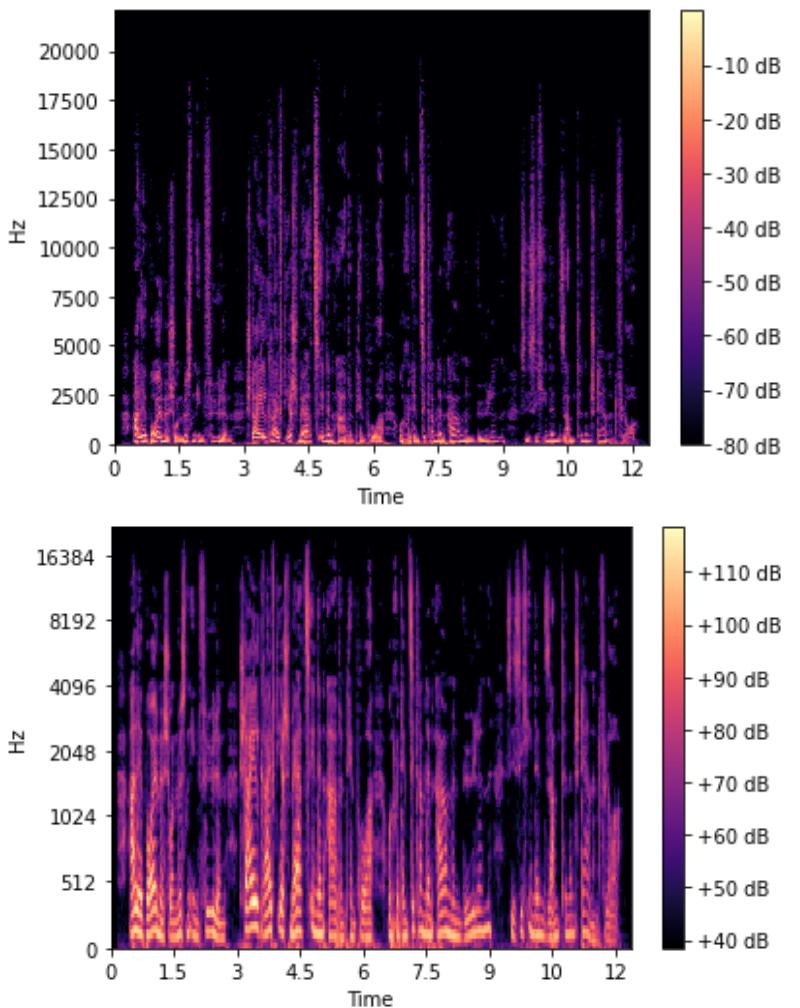
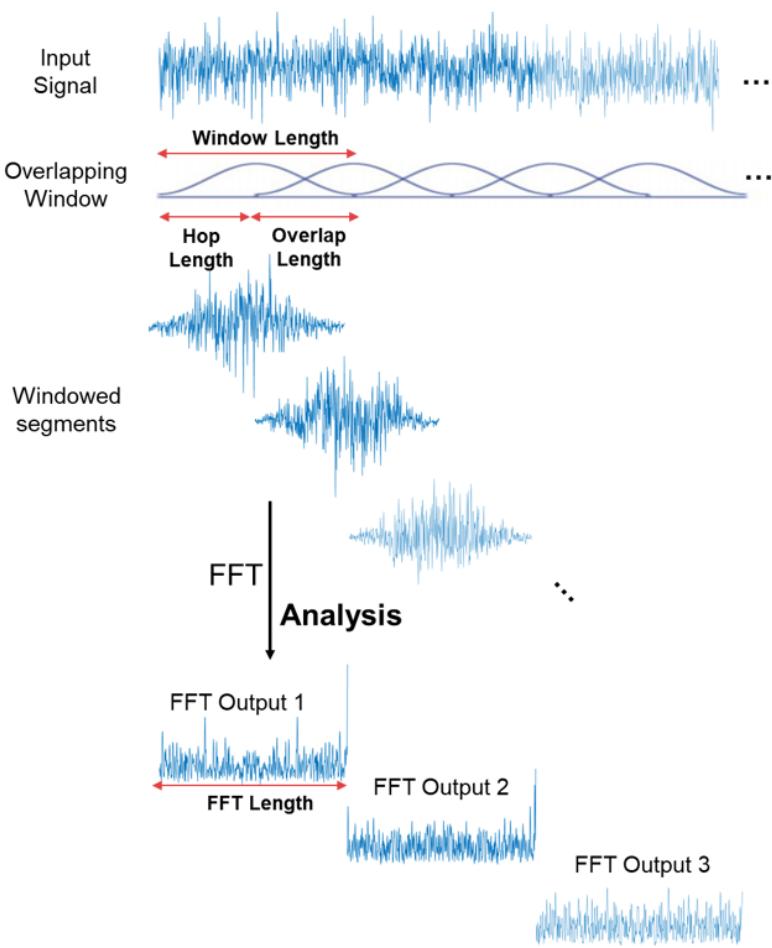
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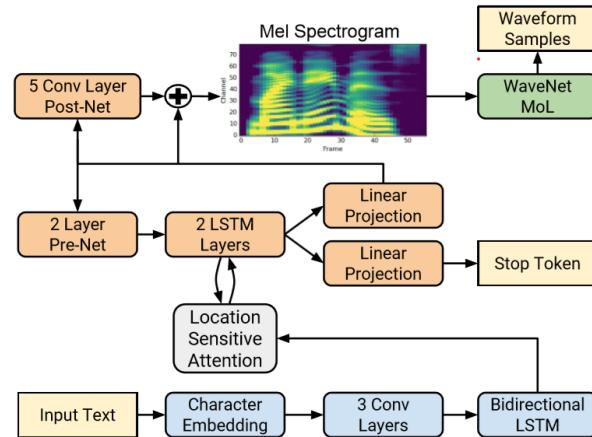
Cascaded TTS systems vs End-to-end TTS systems



Cascaded TTS systems - Acoustic models

Tacotron 2

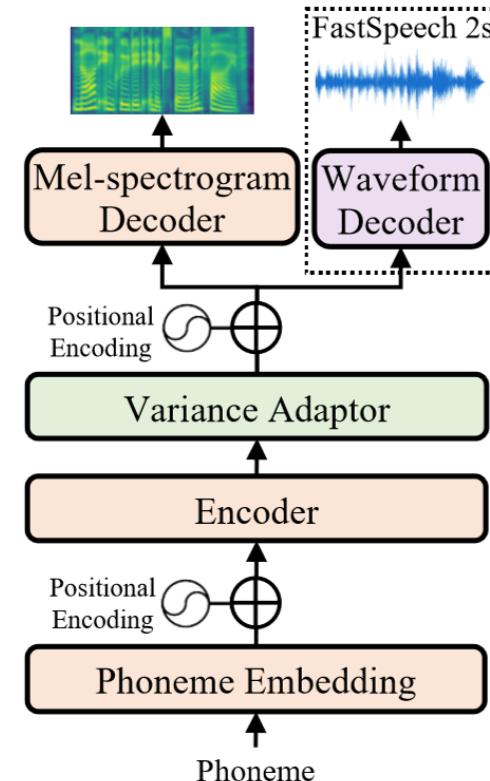
- proposed by Google in 2018
- consists of two parts
 - Encoder:
 - Converts letter sequences to internal feature representation.
 - Decoder:
 - Converts feature representation to Mel spectrogram.



Cascaded TTS systems - Acoustic models

FastSpeech 2

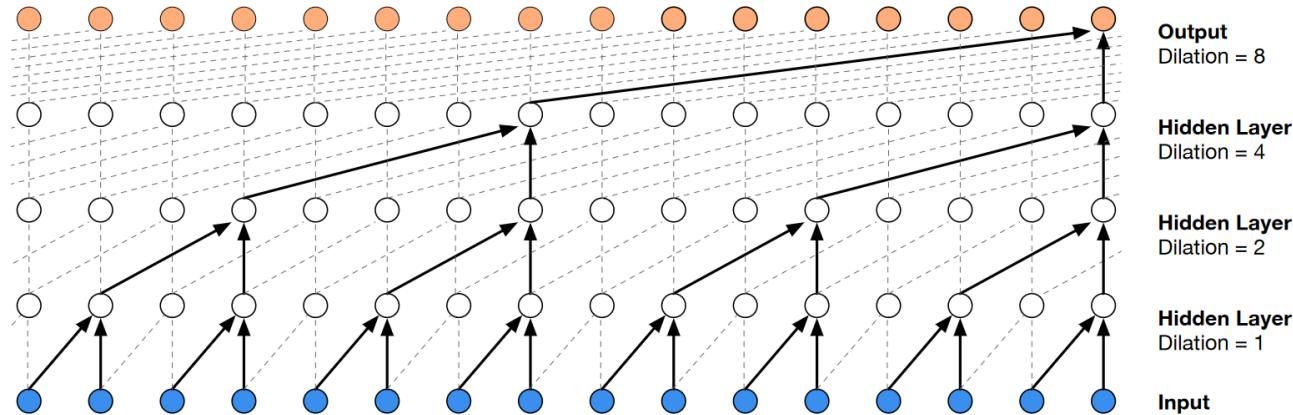
- proposed by Microsoft in 2019
- uses transformer
- uses variance adaptor to combat overfitting



Cascaded TTS systems - Vocoder

WaveNet

- proposed by Google DeepMind in 2016
- uses dilated causal convolutions for autoregressive



Cascaded TTS systems - Vocoder

MelGAN

- proposed by Lyrebird AI in 2019
- uses generative adversarial network (GAN)

GAN



Auto encoder



Deutsch zu Schweizerdeutsch Textübersetzung

Deutscher Text



Der Text darf nicht leer und nicht länger als 256 Zeichen lang sein.

in folgenden Dialekt übersetzen

AG



Übersetzen



Audio synthetisieren

Schweizerdeutscher Text

Dialekt

AG

Synthetisieren

What is Sliderv?

Sliderv is a slides maker and presenter designed for developers, consist of the following features

-  **Text-based** - focus on the content with Markdown, and then style them later
-  **Themable** - theme can be shared and used with npm packages
-  **Developer Friendly** - code highlighting, live coding with autocompletion
-  **Interactive** - embedding Vue components to enhance your expressions
-  **Recording** - built-in recording and camera view
-  **Portable** - export into PDF, PNGs, or even a hostable SPA
-  **Hackable** - anything possible on a webpage

Navigation

Hover on the bottom-left corner to see the navigation's controls panel, [learn more](#)

Keyboard Shortcuts

`right` / `space`

next animation or slide

`left` / `shift space`

previous animation or slide

`up`

previous slide 2

`down`

next slide

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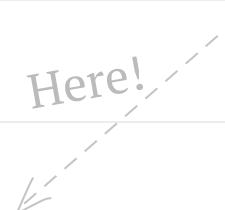
`up`

previous slide 2

`down`

next slide

Here!

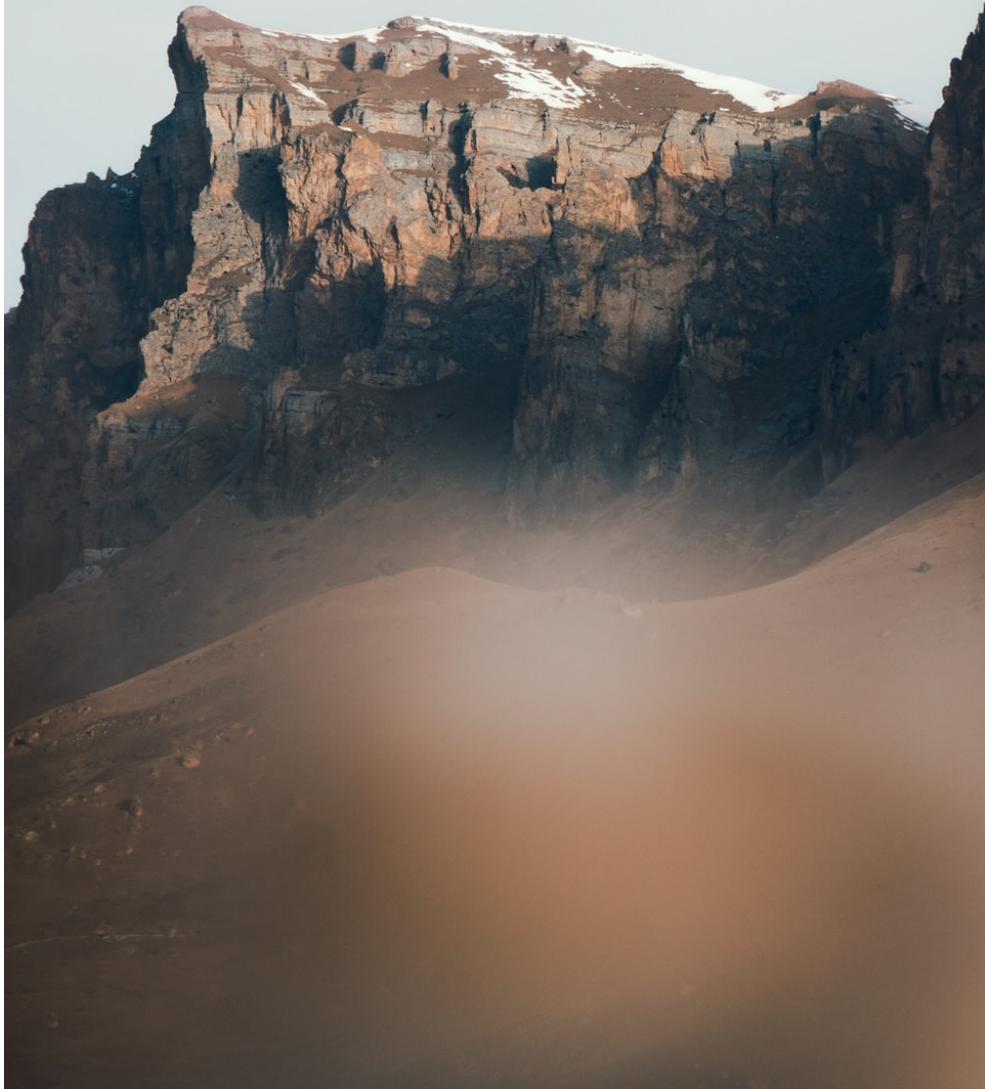


Code

Use code snippets and get the highlighting directly!^[1]

```
interface User {  
  id: number  
  firstName: string  
  lastName: string  
  role: string  
}  
  
function updateUser(id: number, update: User) {  
  const user = getUser(id)  
  const newUser = { ...user, ...update }  
  saveUser(id, newUser)  
}
```

1. [Learn More](#)

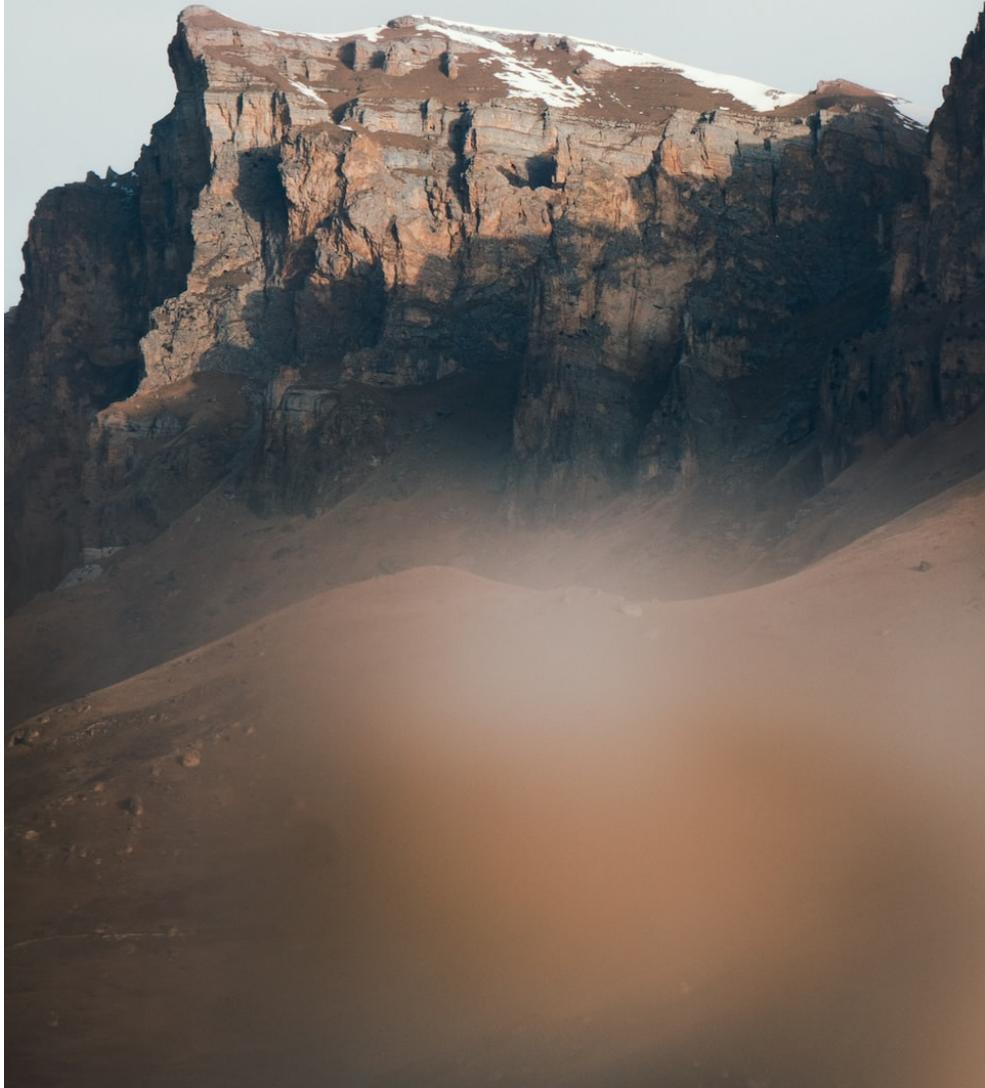


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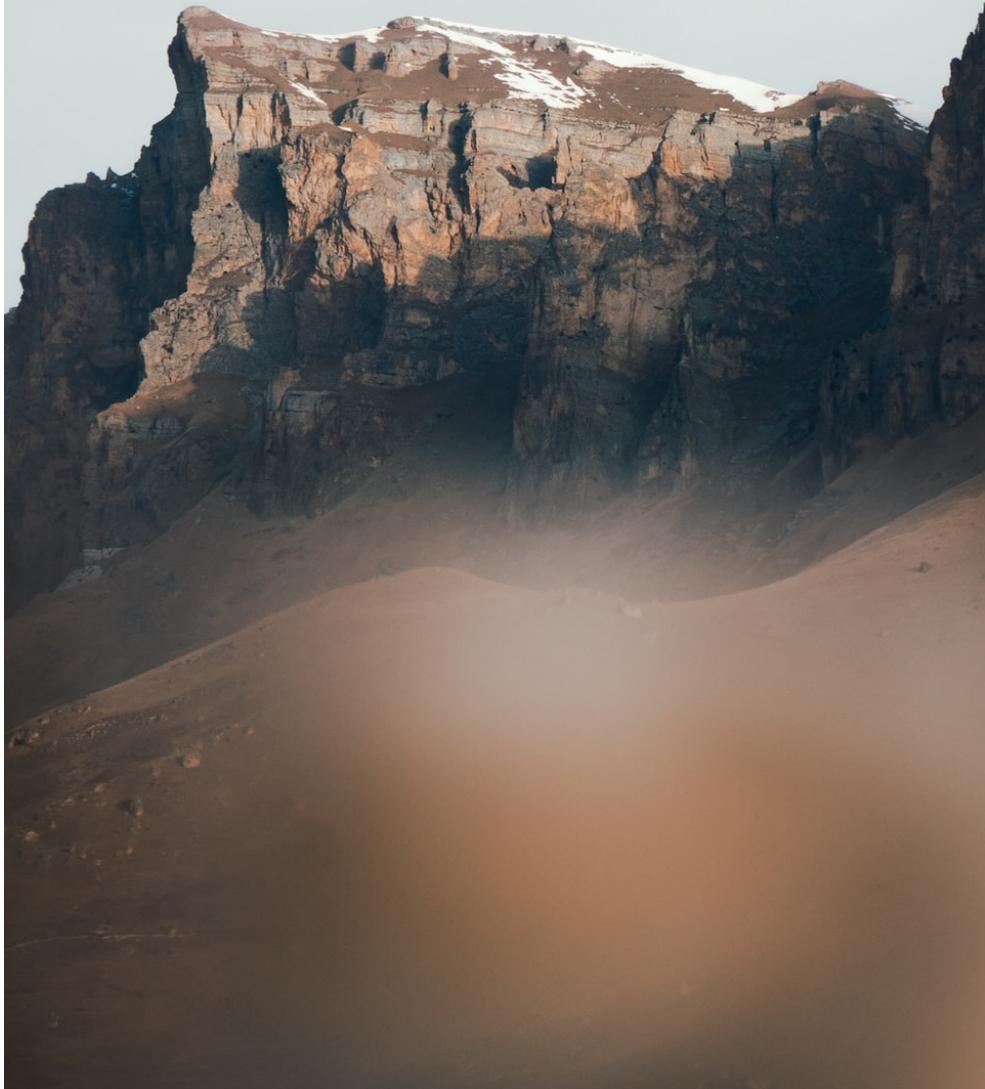


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1. Learn More

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1. Learn More

Components

You can use Vue components directly inside your slides.

We have provided a few built-in components like `<Tweet/>` and `<Youtube/>` that you can use directly. And adding your custom components is also super easy.

```
<Tweet id="1390115482657726468" />
```



```
<Counter :count="10" />
```

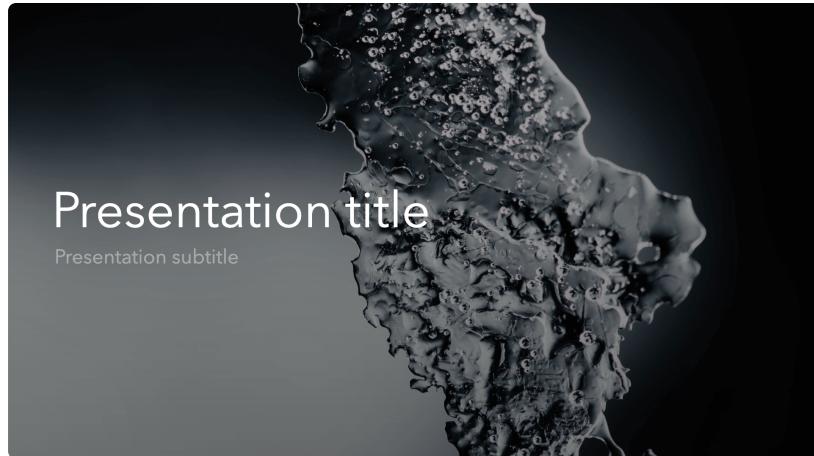
-	10	+
---	----	---

Check out the guides for more.

Themes

Slidev comes with powerful theming support. Themes can provide styles, layouts, components, or even configurations for tools. Switching between themes by just **one edit** in your frontmatter:

```
---  
theme: default  
---
```



```
---  
theme: serif  
---
```



Read more about [How to use a theme](#) and check out the [Awesome Themes Gallery](#).

Animations

Animations are powered by [@vueuse/motion](#).

```
<div  
  v-motion  
  :initial="{ x: -80 }"  
  :enter="{ x: 0 }">  
  Slidev  
</div>
```



LaTeX

LaTeX is supported out-of-box powered by KaTeX.

Inline $\sqrt{3x - 1} + (1 + x)^2$

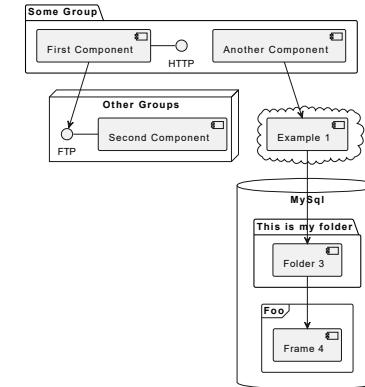
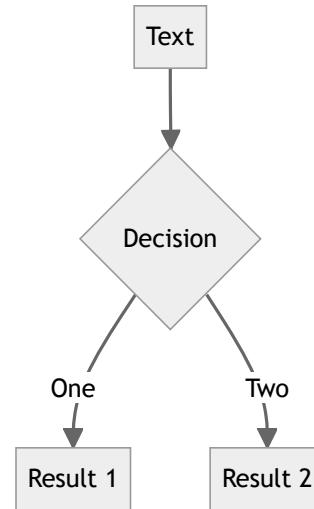
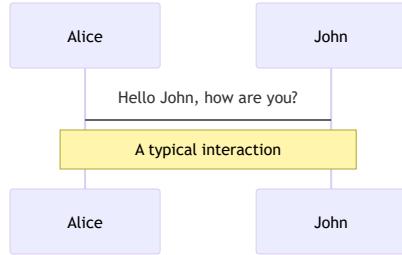
Block

$$\begin{aligned}\nabla \times \vec{\mathbf{B}} - \frac{1}{c} \frac{\partial \vec{\mathbf{E}}}{\partial t} &= \frac{4\pi}{c} \vec{\mathbf{j}} \nabla \cdot \vec{\mathbf{E}} = 4\pi \rho \\ \nabla \times \vec{\mathbf{E}} + \frac{1}{c} \frac{\partial \vec{\mathbf{B}}}{\partial t} &= \vec{\mathbf{0}} \\ \nabla \cdot \vec{\mathbf{B}} &= 0\end{aligned}$$

Learn more

Diagrams

You can create diagrams / graphs from textual descriptions, directly in your Markdown.



[Learn More](#)

Multiple Entries

You can split your slides.md into multiple files and organize them as you want using the `src` attribute.

`slides.md`

```
# Page 1
```

Page 2 from main entry.

```
src: ./subpage.md
```

`subpage.md`

```
# Page 2
```

Page 2 from another file.

[Learn more](#)

Learn More

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