

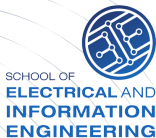
# Listen to your Heart:

## Heartbeat Sound Segmentation & Classification

September 11, 2019

Boikanyo Radiokana & Elias Sepuru

School of Electrical & Information Engineering  
University of the Witwatersrand  
South Africa



# Agenda



## Introduction

## Installation

- GNU/Linux

- Microsoft Windows

- Mac OS X

- Required Packages

## User Interface

- Loading the Theme and Theme Options

- Modifying the theme

- AAU Waves

- Widescreen Support

## Feedback

- Known Problems

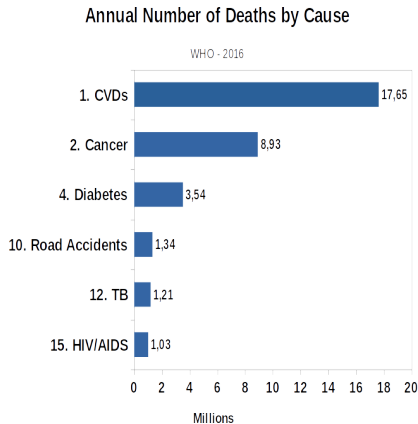
- Bugs, Comments and Suggestions

- Contact Information

# Introduction



- CVDs are the leading causes of death globally - WHO.





- ▶ CVDs are the leading causes of death globally - WHO.
- ▶ Currently used method to check for CVDs is Cardiac Auscultation (CA).





- ▶ CVDs are the leading causes of death globally - WHO.
- ▶ Currently used method to check for CVDs is Cardiac Auscultation (CA).
- ▶ CA is a difficult skill to acquire.



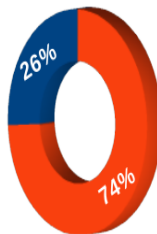
Correct diagnosis using CA in USA, Canada & UK respectively.



## Awarness of Heart Condition

America - 2016

- ▶ CVDs are the leading causes of death globally - WHO.
- ▶ Currently used method to check for CVDs is Cardiac Auscultation (CA).
- ▶ CA is a difficult skill to acquire.
- ▶ People are not aware of their heart conditions.



- Know Their Heart Condition
- Don't Know Their Heart Condition



Easily accessible & reliable heart diagnosis systems would help reduce deaths due to CVDs.

# Installation



The theme consists of four files

1. `beamerthemeAAUsimple.sty`
2. `beamerinnerthemeAAUsimple.sty`
3. `beamerouterthemeAAUsimple.sty`
4. `beamercolorthemeAAUsimple.sty`

The theme can either be installed for local or global use.





The theme consists of four files

1. `beamerthemeAAUsimple.sty`
2. `beamerinnerthemeAAUsimple.sty`
3. `beamerouterthemeAAUsimple.sty`
4. `beamercolorthemeAAUsimple.sty`

The theme can either be installed for local or global use.

## Local Installation

The simplest way of installing the theme is by placing the four theme files in the same folder as your presentation. When you download the theme, the four theme files are located in the `local` folder.



## Global Installation

- ▶ If you wish to make the theme globally available, you must put the files in your local latex directory tree. The location of the root of the local directory tree depends on the operating system and the latex distribution. On the following slides, you can read the instructions for some common setups.
- ▶ When you download the theme, the four theme files are embedded in a directory structure (in the `global` folder) ready to be copied directly to the root of your local directory tree.
- ▶ On the following slides, we refer to this directory structure as `<dirstruct>`. **Note** that some parts of the directory may already exist if you have installed other packages in your local latex directory tree. If this is the case, you simply merge `<dirstruct>` with your existing setup.



## Ubuntu with TeX Live

1. Place the `<dirstruct>` in the root of your local latex directory tree. By default it is  
`~/texmf`  
If the root does not exist, create it. The symbol `~` refers to your home folder, i.e., `/home/<username>`
2. In a terminal run  
`$ texhash ~/texmf`



## Windows with MiKTeX

Apparently, MiKTeX does not include a local latex directory tree by default. Therefore, you first have to create it.

1. To do this, create a folder `<somewhere>` named, e.g., `texmf`
2. Add this folder in the Roots tab of the MiKTeX Settings dialog
3. Place the `<dirstruct>` in your newly created local latex directory tree  
`<somewhere>\texmf`
4. Open the MiKTeX Settings dialog and click Refresh FNDB.



## Windows with TeX Live

In the advanced TeX Live Installer, you can manually change the default position of the root of the local latex directory tree. However, we assume the default position below.

1. Place the `<dirstuct>` in your local latex directory tree  
`%USERPROFILE%\texmf`  
If it does not exist, create it. In XP `%USERPROFILE%` is  
`c:\Document and Settings\<username>`  
by default, and in Vista and above it is by default  
`c:\Users\<username>`
2. Open the TeX Live Manager dialog and select 'Update filename database' under 'Actions'.

# Installation

Mac OS X



## Mac OS X with MacTeX

Place the `<dirstruct>` in the root of your local latex directory tree.

By default it is

`~/Library/texmf`

If the root does not exist, create it. The symbol `~` refers to your home folder, i.e., `/home/<username>`



Of course, you have to have the Beamer class installed. In addition, the theme loads two packages

- ▶ TikZ<sup>1</sup>
- ▶ calc

These packages are very common and should therefore be included in your latex distribution.

---

<sup>1</sup>By the way, TikZ is an awesome package for creating beautiful graphics. If you do not believe me, then have a look at these [online examples](#) or the [pgf user manual](#). If you want to create beautiful plots, you should use the pgfplots package which is based on TikZ.



## The Presentation Theme

It is very simple to load the presentation theme. Just type

```
\usetheme[<options>]{AAUsimple}
```

which is exactly the same way other beamer presentation themes are loaded. The presentation theme loads the inner, outer and color AAU Simple theme files and passes the <options> on to these files.

## The Inner Theme

You can load the inner theme directly by

```
\useinnertheme{AAUsimple}
```

and it has no options.





## The Outer Theme

You can load the outer theme directly by

```
\useoutertheme[<options>]{AAUsimple}
```

Currently, the theme options are

- ▶ `progressstyle={fixedCircCnt, movCircCnt, or corner}`: set how the progress is illustrated. The value `fixedCircCnt` is the default.
- ▶ `rotationcw`: set the direction of the rotation of the progress circle to clockwise instead of counterclockwise. This option has only effect for the circular progress bars.
- ▶ `shownavsym`: show the navigation symbols

# User Interface

Loading the Theme and Theme Options



## The Color Theme

You can load the color theme directly by

```
\usecolortheme{AAUsimple}
```

and it has no options.



### The Color Theme

You can load the color theme directly by

```
\usecolortheme{AAUsimple}
```

and it has no options.

### The Color Element AAUsimple

The color theme defines a new beamer color element named `AAUsimple` whose foreground and background colors are

- ▶ fg: light blue (`{RGB}{194,193,204}`)
- ▶ bg: dark blue (`{RGB}{33,26,82}`)

You can use these colors in the standard beamer way by using the command `\usebeamercolor[<fg or bg>]{AAUsimple}`. See the beamer manual for instructions.



## The Color Theme

You can load the color theme directly by

```
\usecolortheme{AAUsimple}
```

and it has no options.

## The Color Element AAUsimple

The color theme defines a new beamer color element named `AAUsimple` whose foreground and background colors are

- ▶ fg: light blue (`{RGB}{194,193,204}`)
- ▶ bg: dark blue (`{RGB}{33,26,82}`)

You can use these colors in the standard beamer way by using the command `\usebeamercolor[<fg or bg>]{AAUsimple}`. See the beamer manual for instructions.

Note that this version of the theme is an official AAU version and is in accordance with the **AAU design guide**. However, you can easily change it (including the colour of the logo) by following the steps in `beamercolorthemeAAUsimple.sty`.

# User Interface

## Modifying the Theme



- ▶ The default configuration of fonts, colors, and layout complies with the **AAU design guidelines** and is the **official** version of the theme.

# User Interface

## Modifying the Theme



- ▶ The default configuration of fonts, colors, and layout complies with the **AAU design guidelines** and is the **official** version of the theme.
- ▶ However, you can modify specific elements of the theme through the templates provided by the beamer class. Please refer to the beamer user manual for instructions.

# User Interface

## Modifying the Theme



13

- ▶ The default configuration of fonts, colors, and layout complies with the **AAU design guidelines** and is the **official** version of the theme.
- ▶ However, you can modify specific elements of the theme through the templates provided by the beamer class. Please refer to the beamer user manual for instructions.
- ▶ For example, on this slide the following commands have been used
  - ▶ Change the header colours:  
`\setbeamercolor{AAUsimple}{fg=blue!20,bg=red!50}`
  - ▶ Change the color of the structural elements:  
`\setbeamercolor{structure}{fg=black}`
  - ▶ Change the frame title text color:  
`\setbeamercolor{frametitle}{use=structure, fg=structure.fg}`
  - ▶ Change the background color of the text `\setbeamercolor{normal text}{bg=gray!20}`



## The AAU Waves Background Image

- In this documentation, the title page frame and the last frame have the AAU waves as the background image. The AAU waves background image can be added to any single frame by wrapping a frame in the following way

```
\aauwavesbg  
\begin{frame}[<options>]{Frame Title}{Frame Subtitle}  
...  
\end{frame}}
```





## The AAU Waves Background Image

- ▶ In this documentation, the title page frame and the last frame have the AAU waves as the background image. The AAU waves background image can be added to any single frame by wrapping a frame in the following way

```
{\aauwavesbg  
\begin{frame}[<options>]{Frame Title}{Frame Subtitle}  
...  
\end{frame}}
```

- ▶ Ideally, I would like to create a new frame option called `aauwavesbg` which can enable the AAU waves background. However, I have not been able to figure out how such an option can be added. If you know how this can be done, please contact me.



## Widescreen Support

Newer projectors and almost any modern TV support a widescreen format such as 16:10 or 16:9. Beamer ( $\geq$  v. 3.10) supports various aspect ratios of the slides. According to section 8.3 on page 77 of the Beamer user guide v. 3.10, you can write

```
\documentclass[aspectratio=1610]{beamer}
```

to get slides with an aspect ratio of 16:10. You can also use 169, 149, 54, 43 (default), and 32 to get other aspect ratios.



More than 50 slides Internally, TeX cannot work with numbers exceeding  $\pm 16$

# Feedback

Bugs, Comments and Suggestions



- There are probably still some bugs in the theme. If you should find one, then please let me know. No bug is too small!

# Feedback

Bugs, Comments and Suggestions



- ▶ There are probably still some bugs in the theme. If you should find one, then please let me know. No bug is too small!
- ▶ Also, please contact me, if you have some exciting new ideas or just some simple usability improvements.



In case you have any comments, suggestions or have found a bug, please do not hesitate to contact me. You can find my contact details below.

Boikanyo Radiokana & Elias Sepuru  
<http://kom.aau.dk/~jkn>  
Niels Jernes Vej 12, A6-309  
9220 Aalborg Ø

Thank you for using this theme!

