

Bottle Detection in the Wild Using Low-Altitude Unmanned Aerial Vehicles

Jinwang Wang, Wei Guo, Ting Pan, Huai Yu, Lin Duan, Wen Yang

Wuhan University(WHU)

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武汉大学
WUHAN UNIVERSITY

Please use Metropolis Theme Instead

Thank you for wanting to use sthlm.

However, **you really should consider** using the Metropolis (mTheme) theme developed by Matthias Vogelgesang and the LaTeX community instead as it is very well maintained and documented.

<https://goo.gl/r683yn>

1. Motivation
2. UAV-Bottle Dataset
3. Baselines and Methods
4. Conclusion and Future Work
5. Features

Motivation

sthlm theme was originally designed to bring pdflatex support and color to the unique beamer **hsrcm** theme designed by Benjamin Weiss. Thank You Ben!

<https://goo.gl/NRseuc>

Since then, **sthlm** has borrowed heavily from **mTheme** developed by Matthias Vogelgesang.

sthlm continues to be a theme that can easily be modified through the style files. If you are looking for a packaged theme, then I highly recommend **mTheme**.

I use a custom version of **sthlm** for daily decks and make a vanilla version of the theme available for others to use and modify. - Enjoy!

sthlm theme has been designed and tested to work within the SageMathCloud (Linux) environment.

Warning of Build Issues

I cannot guarantee that the code used to create the sthlm theme is *error free, optimized, well written* nor *if it will work in your production environment*.

If you have read this far, then you are probably interested in using / modifying this theme for your own project.

Everything you need is in the

⦿ style files:

- beamerthemesthm.sty,
- beamerfontthemesthm.sty,
- beamercolorthemesthm.sty.

Get it on GitHub

This theme and all the documentation is hosted on GitHub

Download, Fork, Contribute

<https://goo.gl/0Wg6xt>



Figure: Hosted on GitHub

Thank You Overleaf

Special thank you to **Overleaf** - especially **Dr. Lian Tze Lim** for supporting those using the theme on Overleaf. Awesome work!

You can view and download the theme from **Overleaf**.

<https://goo.gl/Z5zrsF>



Figure: Thank You Overleaf

Theme Package Requirements

This theme requires that the following packages are installed:

- ⊙ *beamer*
- ⊙ *backgrounds*
- ⊙ *booktabs*
- ⊙ *calc*
- ⊙ *datetime*
- ⊙ *ragged2e*
- ⊙ *tikz*

There is always the option of simplifying the theme to reduce the number of required packages.

Replace the Logo With Your Own

The [Sigtunaskolan Humanistiska Läroverket](#) logo, logo.png, should be replaced with your own. I teach within the Mathematics Institution at SSHL.



Figure: SSHL Logo

Theme Options

Option	Description
<code>newPxFont</code>	<code>newpxtext</code> and <code>newpxtext</code> fonts will be used (pdfLaTeX)
<code>progressbar</code>	Frame Title progress bar
<code>sectionpages</code>	Section pages
<code>fullfooter</code>	Footers with logo
<code>numfooter</code>	Footers with page number only
<code>greybg</code>	Frame background default is set to grey
<code>cblock</code>	Blocks with colored background
<code>protectFrameTitle</code>	Protect the frame title (if needed)
<code>valigncolumns</code>	Vertically align columns

UAV-Bottle Dataset

The sthlm theme style file `beamerthemesthlm.sty` references the `beamercolorthemesthlm.sty` file for the theme colors automatically.

If you wish to bring your own color theme, then you will have to either change the reference in the `beamerthemesthlm.sty` file or rename your style file to `beamercolorthemesthlm.sty`.

Primary Presentation Colors

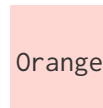
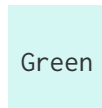
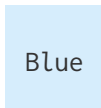
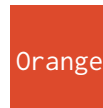
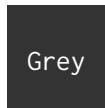


Table: Colored Text

Red	LightRed	Red
Blue	LightBlue	Blue
Green	LightGreen	Green
Purple	LightPurple	Purple
Orange	LightOrange	Orange
Grey	Grey	DarkGrey

Green Background

Light Green Background

Great for examples

Blue Background

Light Blue Background

Great for definitions

Red Background

Light Red Background

Great for alerts

Purple Background

Light Purple Background

Great for Proofs

Keeping it Simple

Plain Frame

Plain Frame

Baselines and Methods

Block Title Here

Great for definitions

Alert Title Here

Great for definitions

Example Title Here

Great for examples

Block Title Here

- ⦿ point 1
- ⦿ point 2

Blue Colored Blocks

Produced by using the cblock theme option

Additional Blocks

Alert Block

Highlight important information.

Red Colored Blocks

Produced by using the cblock theme option

Example Block

Examples can be good.

Green Colored Blocks

Produced by using the cblock theme option

Purple customization

Using the theme colors to generate colored blocks.

Conclusion and Future Work

No Special Fonts Required

This theme was originally made to work with pdf \LaTeX and the default latex fonts.

sthlm does comes with a pdf \LaTeX font option, **newPxFont**, which loads the following fonts:

- ⊙ *newpxtext* for text
- ⊙ *cantarell* for sans-serif
- ⊙ *inconsolata* for sans-serif monospaced
- ⊙ *newpxmath* for math

Please refer to the `beamerfontthememsthlm.sty` for the package requirements.

Features

Table: Selection of window function and their properties

Window	First side lobe	3 dB bandwidth	Roll-off
Rectangular	13.2 dB	0.886 Hz/bin	6 dB/oct
Triangular	26.4 dB	1.276 Hz/bin	12 dB/oct
Hann	31.0 dB	1.442 Hz/bin	18 dB/oct
Hamming	41.0 dB	1.300 Hz/bin	6 dB/oct

Mathematics Step by Step

Show $[x^n]' = nx^{n-1}$ by using first principles.

$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

Mathematics Step by Step

Show $[x^n]' = nx^{n-1}$ by using first principles.

$$\begin{aligned} f'(x) &= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} \\ &= \lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^n - (x)^n}{\Delta x} \end{aligned}$$

Mathematics Step by Step

Show $[x^n]' = nx^{n-1}$ by using first principles.

$$\begin{aligned} f'(x) &= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} \\ &= \lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^n - (x)^n}{\Delta x} \\ &= \lim_{\Delta x \rightarrow 0} \frac{\binom{n}{0}x^n\Delta x^0 + \binom{n}{1}x^{n-1}\Delta x^1 + \cdots + \binom{n}{n}x^0\Delta x^n - x^n}{\Delta x} \end{aligned}$$

Mathematics Step by Step

Show $[x^n]' = nx^{n-1}$ by using first principles.

$$\begin{aligned}f'(x) &= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^n - (x)^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{\binom{n}{0}x^n\Delta x^0 + \binom{n}{1}x^{n-1}\Delta x^1 + \cdots + \binom{n}{n}x^0\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{1x^n(1) + nx^{n-1}\Delta x^1 + \cdots + 1(1)\Delta x^n - x^n}{\Delta x}\end{aligned}$$

Mathematics Step by Step

Show $[x^n]' = nx^{n-1}$ by using first principles.

$$\begin{aligned}f'(x) &= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^n - (x)^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{\binom{n}{0}x^n\Delta x^0 + \binom{n}{1}x^{n-1}\Delta x^1 + \cdots + \binom{n}{n}x^0\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{1x^n(1) + nx^{n-1}\Delta x^1 + \cdots + 1(1)\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{x^n + nx^{n-1}\Delta x + \cdots + \Delta x^n - x^n}{\Delta x}\end{aligned}$$

Mathematics Step by Step

Show $[x^n]' = nx^{n-1}$ by using first principles.

$$\begin{aligned}f'(x) &= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^n - (x)^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{\binom{n}{0}x^n\Delta x^0 + \binom{n}{1}x^{n-1}\Delta x^1 + \cdots + \binom{n}{n}x^0\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{1x^n(1) + nx^{n-1}\Delta x^1 + \cdots + 1(1)\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{x^n + nx^{n-1}\Delta x + \cdots + \Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{\cancel{x^n}(nx^{n-1} + \cdots + \Delta x^{n-1})}{\cancel{\Delta x}}\end{aligned}$$

Mathematics Step by Step

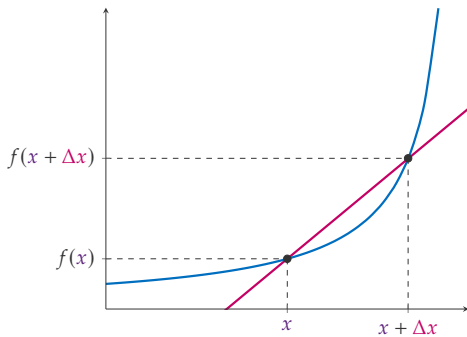
Show $[x^n]' = nx^{n-1}$ by using first principles.

$$\begin{aligned}f'(x) &= \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^n - (x)^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{\binom{n}{0}x^n\Delta x^0 + \binom{n}{1}x^{n-1}\Delta x^1 + \cdots + \binom{n}{n}x^0\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{1x^n(1) + nx^{n-1}\Delta x^1 + \cdots + 1(1)\Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{x^n + nx^{n-1}\Delta x + \cdots + \Delta x^n - x^n}{\Delta x} \\&= \lim_{\Delta x \rightarrow 0} \frac{\cancel{x^n}(nx^{n-1} + \cdots + \Delta x^{n-1})}{\cancel{\Delta x}} \\&= nx^{n-1}\end{aligned}$$

Gaussian Probability Density Function

$$f(x | \mu, \sigma^2) = \frac{1}{\sqrt{2\sigma^2\pi}} e^{-\frac{(x - \mu)^2}{2\sigma^2}}$$

More Mathematics



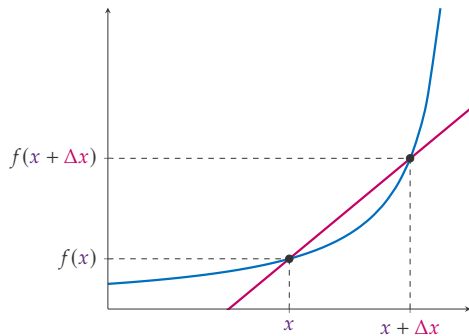
$$m = \frac{\Delta y}{\Delta x}$$

$$m = \underline{\hspace{2cm}}$$

$$m = \underline{\hspace{2cm}}$$

⏟

More Mathematics

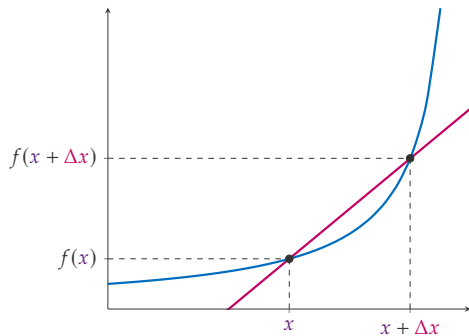


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

$$m = \underbrace{\hspace{10em}}$$

More Mathematics

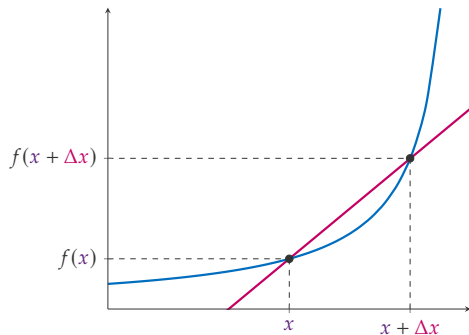


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

$$m = \underbrace{\hspace{10em}}$$

More Mathematics

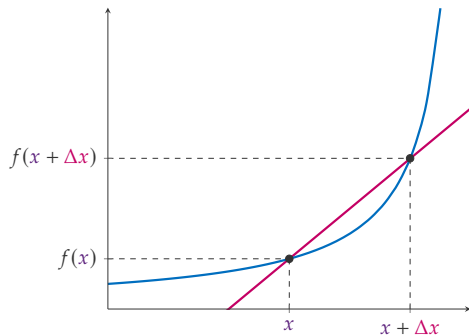


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$$m = \underbrace{\hspace{10em}}$$

More Mathematics

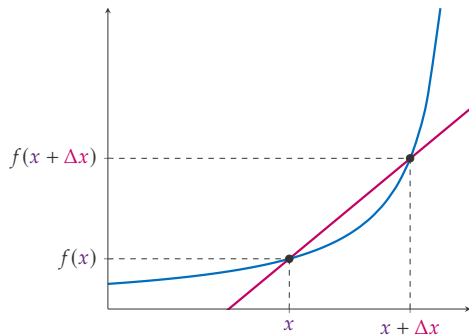


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x}$$

$$m = \underbrace{\hspace{10em}}$$

More Mathematics

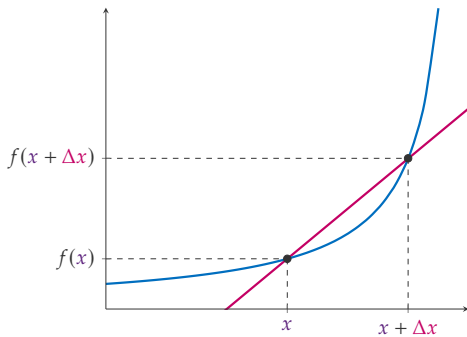


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x -}$$

$$m = \underbrace{\hspace{10em}}$$

More Mathematics

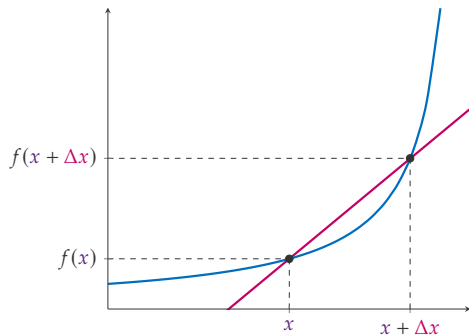


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x - x}$$

$$m = \underbrace{\hspace{10em}}$$

More Mathematics

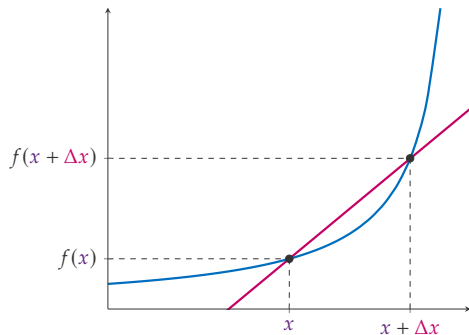


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x - x}$$

$$m = \underbrace{\frac{f(x + \Delta x) - f(x)}{x + \Delta x - x}}$$

More Mathematics

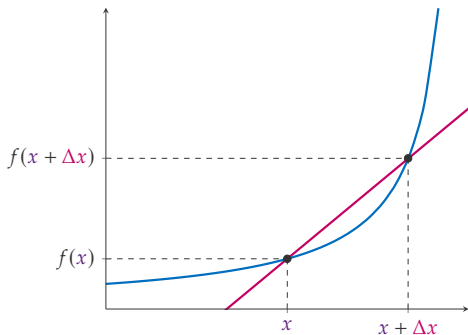


$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x - x}$$

$$m = \underbrace{\frac{f(x + \Delta x) - f(x)}{\Delta x}}$$

More Mathematics



$$m = \frac{\Delta y}{\Delta x}$$

$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x - x}$$

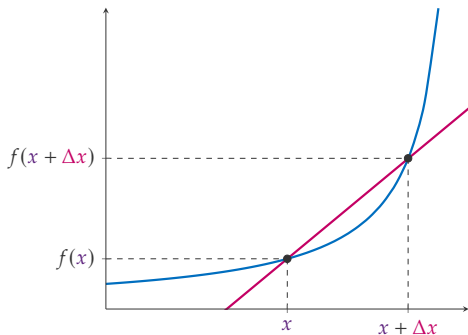
$$m = \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

difference quotient

The slope of the secant line

⊙ can be found using the difference quotient

More Mathematics



$$m = \frac{\Delta y}{\Delta x}$$

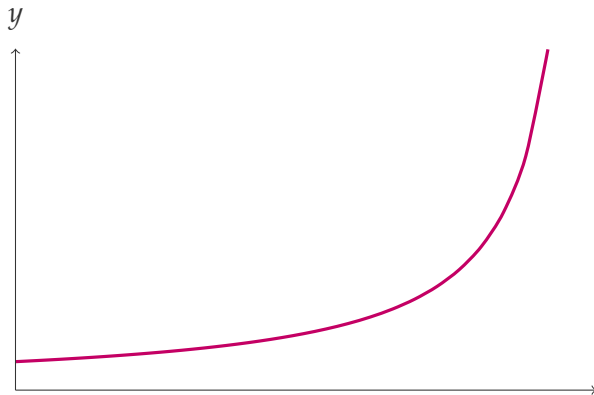
$$m = \frac{f(x + \Delta x) - f(x)}{x + \Delta x - x}$$

$$m = \underbrace{\frac{f(x + \Delta x) - f(x)}{\Delta x}}_{\text{difference quotient}}$$

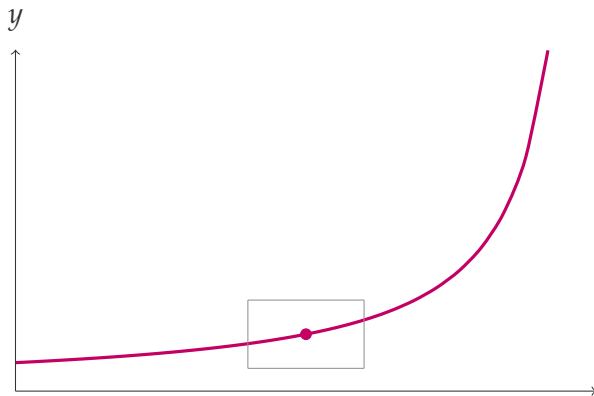
The slope of the secant line

- ⊙ can be found using the **difference quotient**
- ⊙ represents a **function's average** slope on the interval $[x, x + \Delta x]$

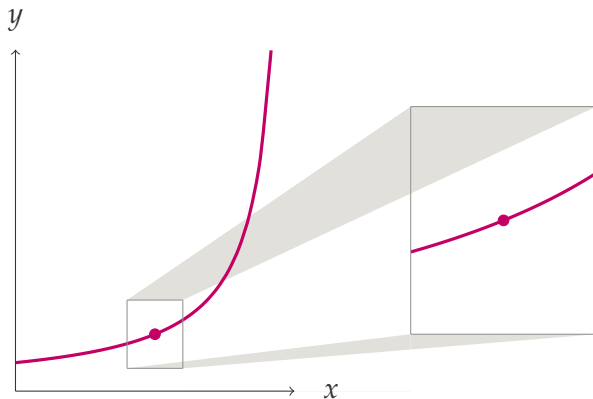
Fragile Frames Not a Problem



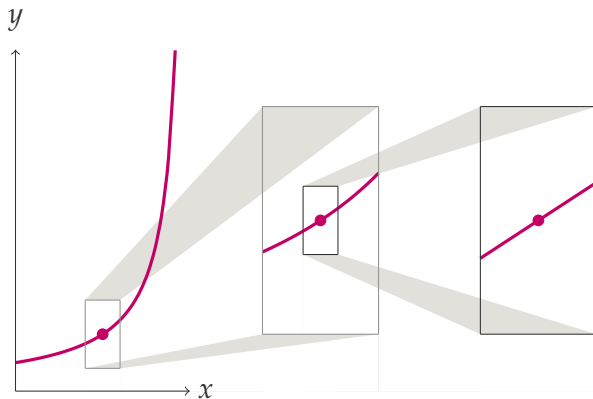
Fragile Frames Not a Problem



Fragile Frames Not a Problem



Fragile Frames Not a Problem



PGFPlots Example

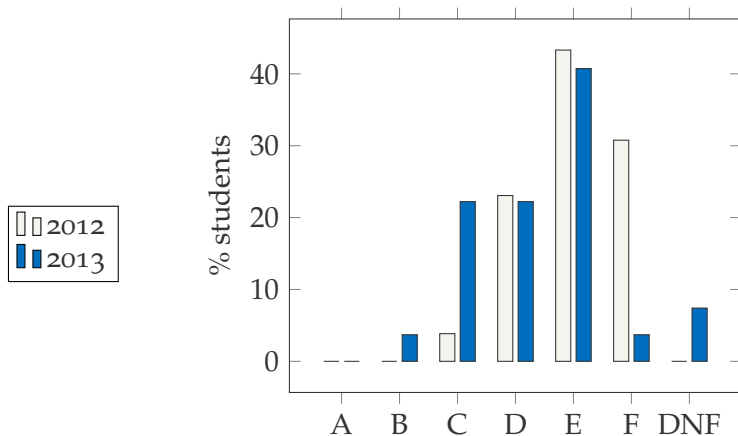


Figure: Consistent improvement over the last year

Lorem ipsum dolor sit amet,
consectetur adipisicing elit,
sed do eiusmod tempor
incididunt ut labore et dolore
magna aliqua. Ut enim ad
minim veniam.

- ⦿ Point 1
 - Sub point a
 - Sub point b
- ⦿ Point 2



Alan V. Oppenheim

Discrete - Time Signal Processing

Prentice Hall Press, 2009



European Broadcasting Union

Specification of the Broadcast Wave Format (BWF)

2011

This sthlm beamer theme is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

If you have any questions or comments

- ◎ Website: markolson.se
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THE
END