# Decibel Threshold Event Displayer

## BTI3031 Project 1 | Final Presentation

January 8, 2025

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# Initial Situation

# Project Goals

- Analyze Audio File

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- Summarize findings in a PDF

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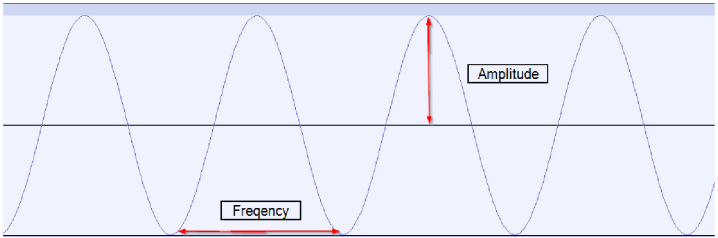
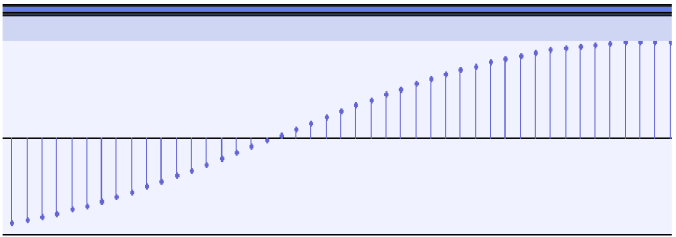
- Analyze Audio File
- Summarize findings in a PDF
- Easy to use

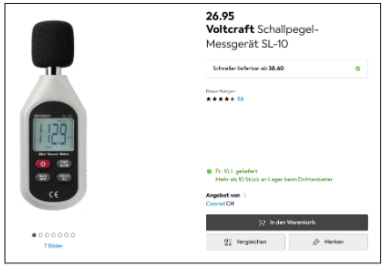
# Audio Files



# Measuring the Sound Level


DecibelX for IOS




Sound level measuring device from Galaxus

# Requirements

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  - Metadata
  - Plot
- User should not need any Technical know-How
- Platform independent

# Technology evaluation

| Technology | Total score |
|---|---|
| Kotlin minimal | 74 |
| Kotlin bundled | 56 |
| Web SwiftLaTeX | 82 |

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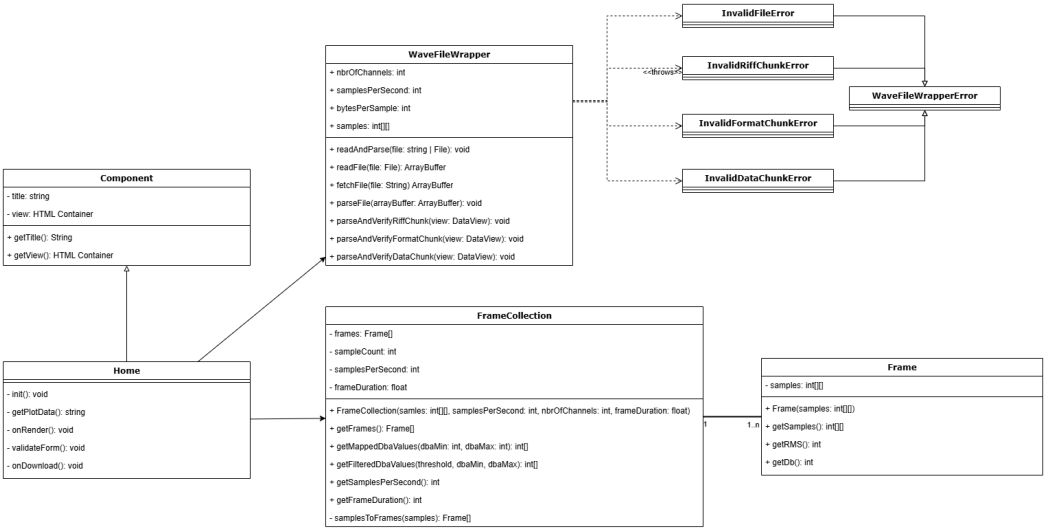
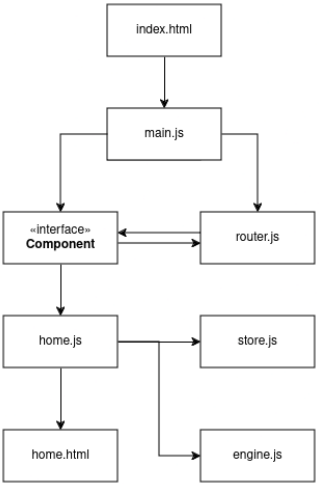
# Architecture - Class Diagram



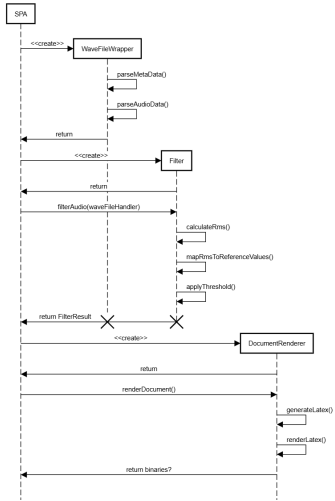
# Architecture - SPA Techstack

- Vanilla JS SPA Framework (Web Programming Module)
- Bootstrap CSS Framework
- SwiftLaTeX in Browser WASM LaTeX rendering Library

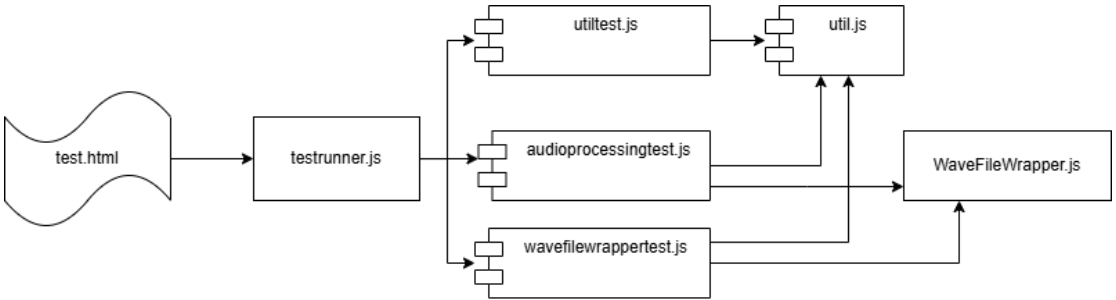


# Processes

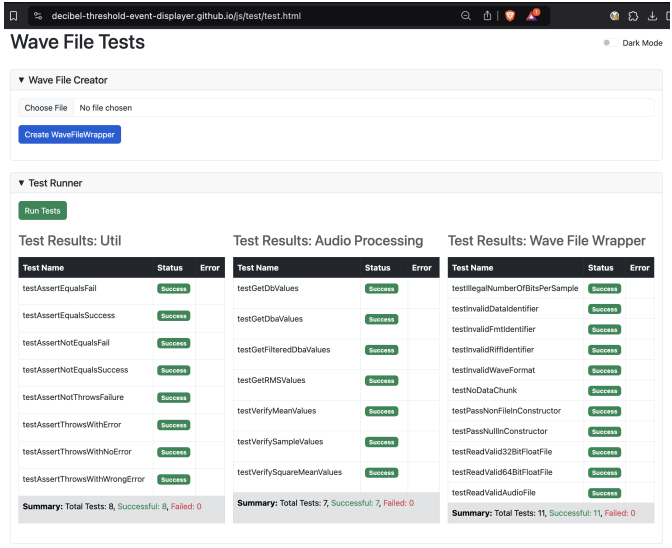
1. Read *.wav File
2. Group samples into frames (duration of 300ms)
3. Calculate root-mean-square (RMS) per frame
4. Convert RMS dB values per frame
5. Map the relative dB to absolute dB(A)
6. Filter the resulting list of dB(A)
7. Render PDF with dB(A) and user data



# Testing - Overview

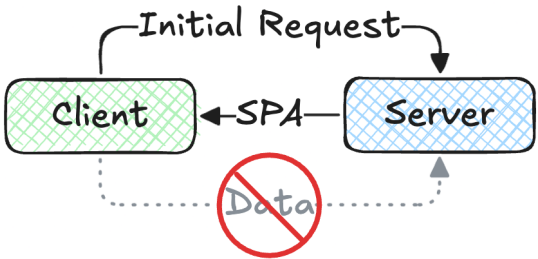


# Testing - In action



# Privacy concerns

- No data is sent to the server, after the initial request
- From the Plot on the PDF the original Audio File cannot be recreated




**The user does not get into legal trouble, using the application or the resulting PDF!**

# License

Dependency Licenses:

- SwiftLaTeX: AGPL-3.0
- pgfplots: GPL-3.0

Resulting License:

- **GPL-3.0 licence (FLOSS)**

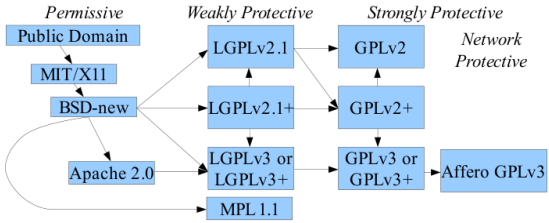
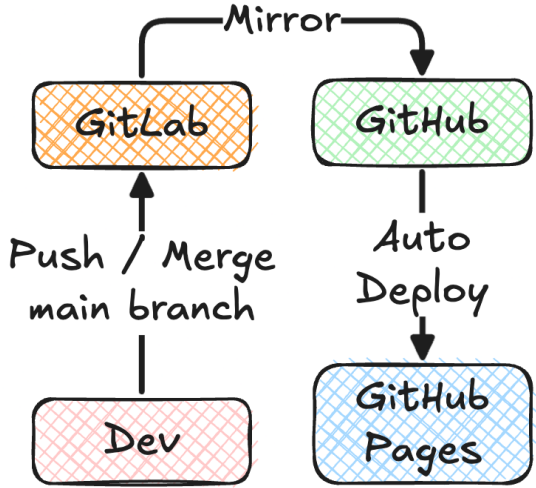



Image Source: https://dwheeler.com/essays/floss-license-slide.html

# Deployment / Distribution

1. A dev pushes or merges code to the main branch
2. GitLab automatically mirrors the repository to GitHub
3. GitHub deploys automatically to GitHub Pages
4. The Application is available under: https://decibel-threshold-event-displayer.github.io/



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# Scrum

- 2 week iterations
- Daily every week
- Review every other week
- Product goals / sprint goals
- GitLab, MS Teams, LaTeX, excalidraw, draw.io

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# Demo

- Watch the demo on YouTube
- Or better yet: Try it yourself on Github Pages!

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# Conclusion

- Product goals achieved
- Scrum generally applied
- Minor issues with GitLab
- Great teamwork and team chemistry
- Interesting and well-defined project
- Lots of insights about audio, WAV files, and WebAssembly

# Future Work

- Localization (DE, FR, IT)
- Custom thresholds
- Custom form fields
- Support more audio formats
- Dark mode / visual improvements



# Questions / Discussion