McMaster University | Engineering Computing & Software

ScoreGen

An audio-to-sheet music generator

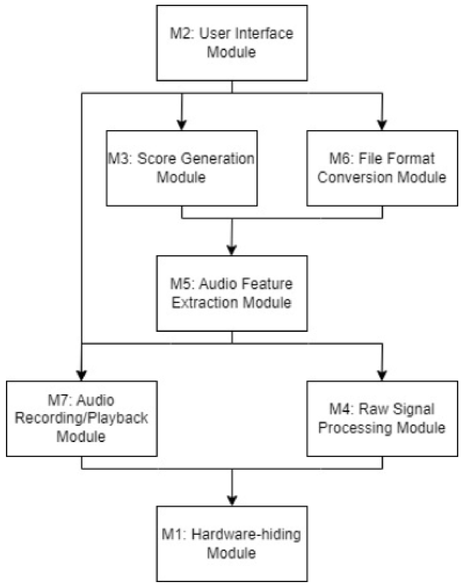
Final year capstone project in the department of Computing and Software.

What is ScoreGen?

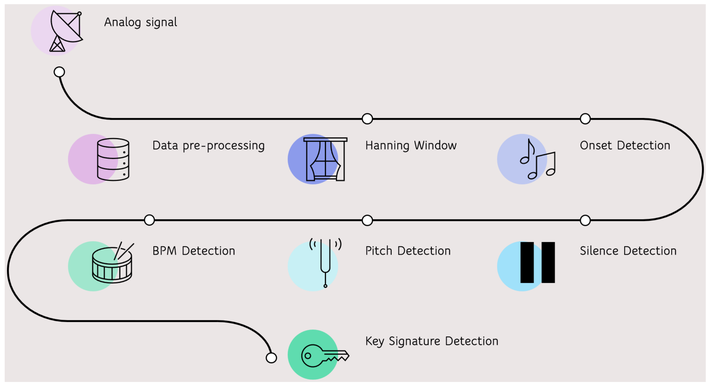
One of the largest roadblocks faced by new musicians is having to learn to read sheet music before they are able to start making music. This can be a large deterrent towards picking up a new skill, and ScoreGen aims to close this gap and make the process of learning an instrument less daunting. In the form of a Windows application, ScoreGen uses signal processing techniques in order to extract meaninfgul information from recorded audio and produce accurate, human-readable sheet music.

ScoreGen produces most accurate results when used with piano input.

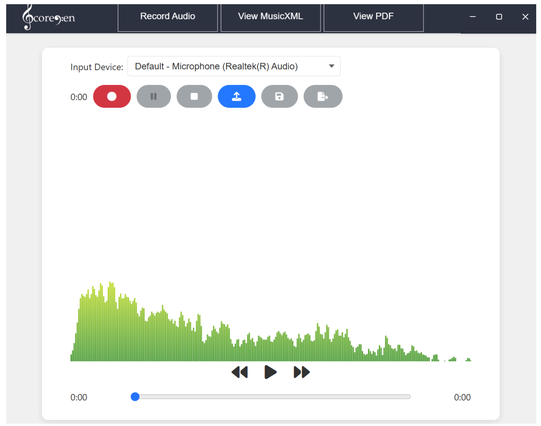
Component Diagram



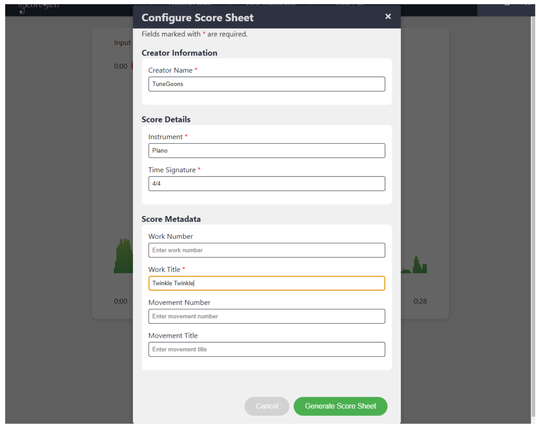
Signal Processing Workflow



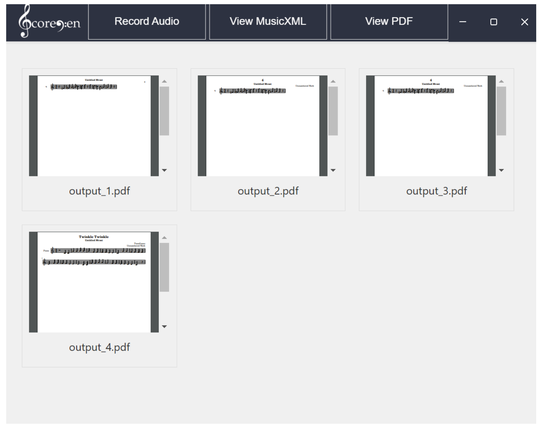
Key Features



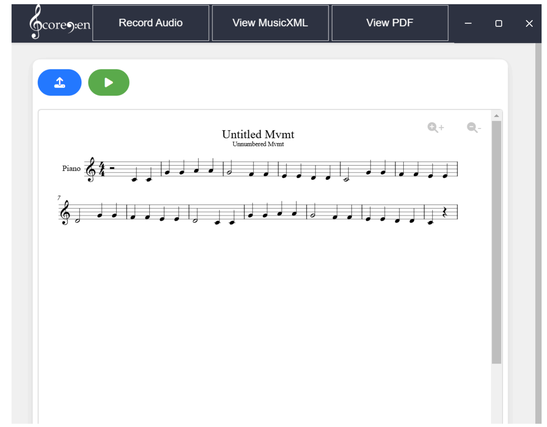
Record/upload audio



Generate sheet music



View, save, and delete PDFs



View musicXML files

Key Results

Performance testing was done to identify pitch and rhythym accuracy, i.e., what percentage of the produced notes match what was actually played.

Musical Scale	C	f#m	C	f#m	C	f#m
BPM	60		120		180	
Pitch accuracy	100%	93.3%	100%	93.3%	86.7%	86.7%
Rhythym accuracy	100%	100%	100%	100%	86.7%	100%
Correct key sig?	Yes	Yes	Yes	Yes	Yes	No

Accomplishments

- **93%** pitch accuracy
- **97.8%** rhythym accuracy
- **Novel design**: only existing product to directly produce sheet music from raw user audio input.
- **Ease of use**: 90% of new users successfully generate a score without needing external prompts

Acknowledgements

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Our Team

Emily Perica | Ian Algenio | Mark Kogan | Jackson Lippert