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## Proposed Project

# Sketch-to-Sound Mapping Using Semi-Supervised Learning

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## Project Objective

Develop a sketch-to-sound model that allows musicians to create their own associations between sound and shape.

## Related Works

Most sketch-to-sound mappings use supervised learning models trained on labelled datasets.

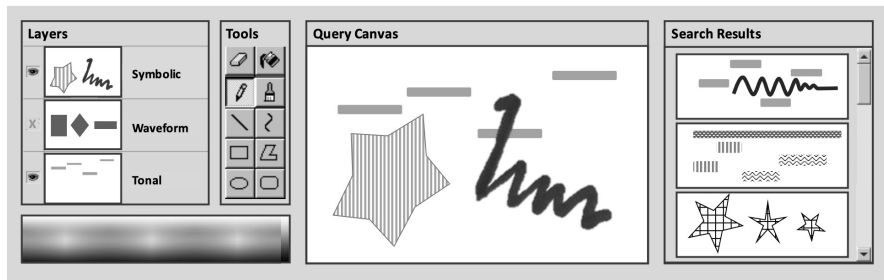
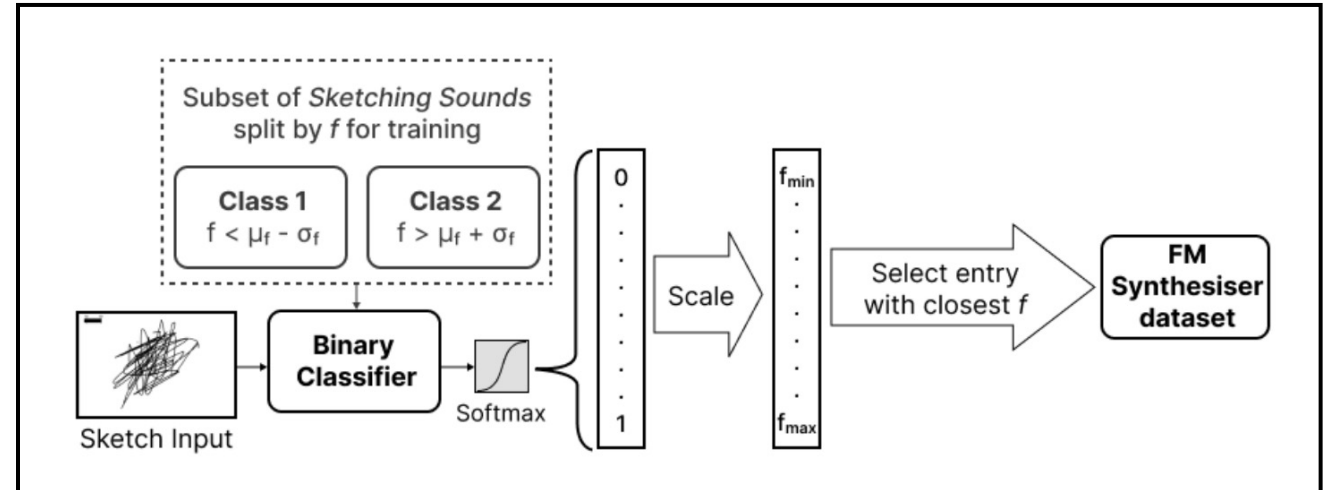


Figure 9: UI mockup of the proposed query-by-visual-sketch search engine for sound.

**Knees and Andersen (2016)** propose associating sounds and their graphical representations.

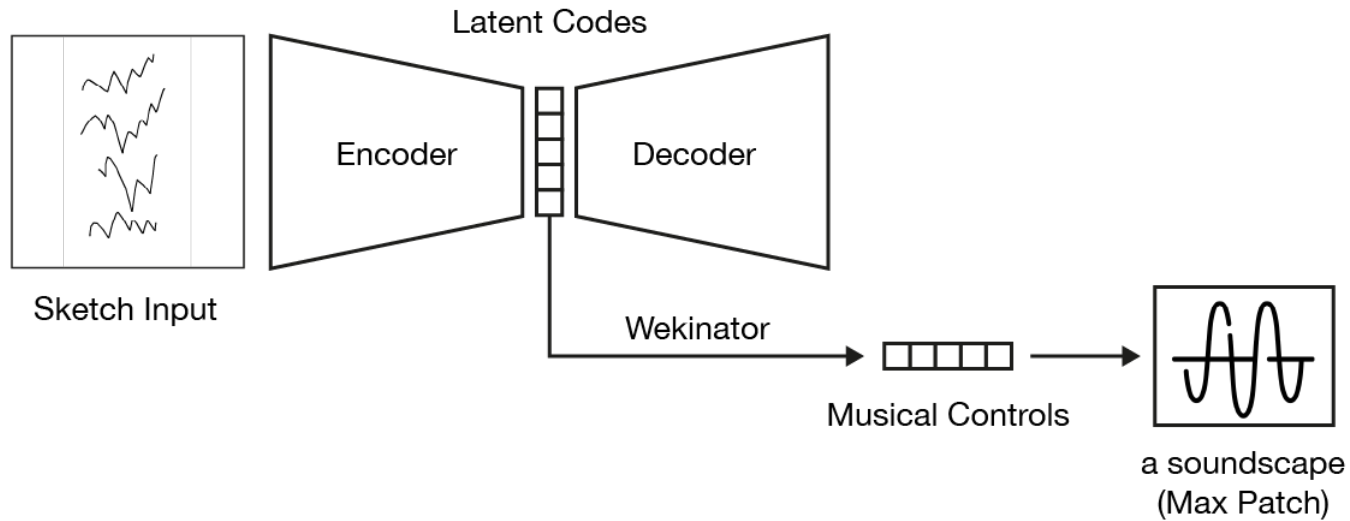


**Löbbers et al.'s (2023)** work uses

- (1) classification models that predict characters (e.g. calm or noisy) of a sketch (Löbbers, et al., 2021),
- (2) a mapping model that selects suitable sounds from a synthesis dataset annotated with a few semantic factors (e.g. sharpness and clarity) (Hayes et al., 2020).

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## System Components



### Sketch to latent codes

VAE model (unsupervised paradigm)

### latent codes to musical controls

Wekinator (supervised paradigm)

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**Interaction Process:** tweak, train, and perform.

1. Prompt the musician with a few example sketches, and let them tweak the musical controls according to example sketches.
2. Train the Wekinator model.
3. Start exploring the soundscape with new sketches.

