

Hands-on Showcase of Generative Text-to-Vibration System

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I. INTRODUCTION

Vibrotactile feedback enriches user experience in XR, gaming, and assistive technologies, but designing such feedback remains difficult due to the lack of accessible authoring tools. Prior methods often rely on waveform editors or audio-to-haptic conversion, both requiring significant expertise. We propose **HapticGen**, the first generative model that produces haptic signals directly from text prompts, reducing cognitive and technical barriers for designers.

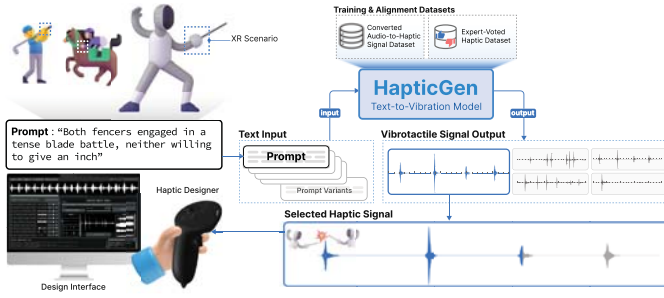


Fig. 1. Overview of HapticGen. Designers input a text prompt, and the system generates multiple haptic signals played on VR controllers via a desktop interface.

II. SYSTEM OVERVIEW

HapticGen builds on a MusicGen-style transformer trained on 335k converted audio-haptic samples and further fine-tuned on expert-rated prompt-vibration pairs. The interface allows users to input a textual scenario, view prompt variations generated via LLMs, and preview the output vibrations on connected Meta Quest controllers without wearing a headset. Users can vote signals up/down, save preferred outputs, and iterate via prompt editing.

III. DEMONSTRATION DESCRIPTION

In this hands-on demo, attendees can:

- Input a descriptive text prompt (e.g., "*a distant thunderstorm rumbling*")
- Generate and preview five vibration variants on Quest Pro controllers
- Rate each signal's match and expressiveness using thumbs up/down

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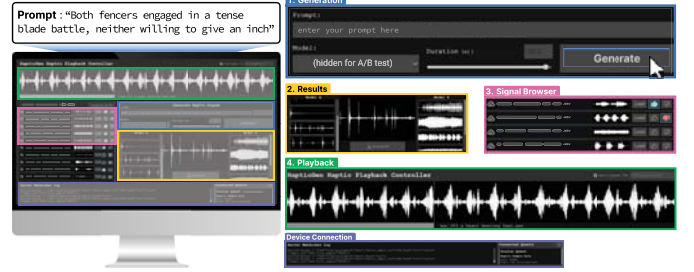


Fig. 2. Our HapticGen interface is divided into four numbered sections: Generation, Results, Signal Browser, and Playback pane.

- Modify the prompt and observe how subtle changes affect tactile output

All interactions occur on a laptop interface, with no need for a VR headset, and the setup is fully standalone.

IV. IMPACT AND FUTURE WORK

HapticGen makes haptic design more accessible to artists, designers, and researchers without deep technical skills. We believe this framework opens new possibilities for expressive and rapid prototyping in haptics, and we aim to extend it to multi-modal and personalized feedback.

V. PROJECT WEB

The model and datasets are open source:

- <https://hapticgen.hcitech.org/>(Official project website with demo videos, documentation, and usage guide.)
- <https://github.com/HapticGen/HapticGen>(Source code for the text-to-vibration model)

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