No Caller ID: A Proposal.

Because sometimes it's good to be a little incognito.

The secret agents behind the next big thing in spy-tech:

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Introduction

Our team is excited to present an innovative approach to the classic prank call. Our aim is to create an audio effect station that alters an outgoing phone call in real time.

With this embedded system project, you can make VOIP calls that will leave the person on the other end guessing. So choose your effects, pick up the phone, and get ready for some cloak-and-dialer fun!

By clicking different buttons on our device, we will take your voice and alter it with one of our pre-set audio modulators (octave up, down, distortion, etc.). This audio will then be sent as a pre-recorded phone call to any active phone number.

Whether you're trying to have a hush-hush 🤫 conversation, throw somebody off the scent 👃, or just have some fun 🤪, this project will give you a license to chill 🧊. And don't worry – no one will be able to trace 🔍 the call back to your voice 🦹.

Goals

We plan to approach this project in the order described below, building our way to the fully-anonymized calling experience. First, we will implement a real-time audio effect system which takes an input analog signal, converts it to a digital stream, applies a given effect, and plays it out via a digital-to-analog converter. This process will happen fully in hardware (on the FPGA fabric).

Next, we will store the resting audio via the ARM core to an on-board SD card. Once we have a stored audio file, we will communicate with a VOIP API to stream our audio as a phone call.

1. Apply audio effects to an analog audio input signal and playback audio through speaker
    a. Use a microphone or audio playback as our input
    b. Realtime audio modification - octave, distortion, etc (physical buttons on board)
    c. Output to speaker (DAC)
2. Store resulting audio to hard storage (SD card?)
3. Send an audio file via a VOIP API (Twilio?) to make an anonymous call

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Stretch Goals

In addition to the primary goals outlined above, we have a series of stretch goals if we reach our primary objective of making an anonymized call. We will build a custom hardware peripheral with a physical phone (using its handset and keypad), add two way audio streaming, and add an additional software interface to control effects and recipients.

1. Interface with a physical phone as our input device (built in microphone, keypad for effects control, etc.)
2. Live stream the altered audio signals over the VOIP API (two way audio?)
3. Software interface to dynamically alter the effects

a. Intensity of distortion
b. Choose the octave of the audio

Equipment

Hardware:

- TerasIC DE1-SOC FPGA
- Microphone
- Retro Phone Handset and Keypad

Software:

- VoIP client