

Project Proposal

CSC 466

A Comparison of Packet Loss Concealment Techniques for VOIP

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Goal

When communicating over the internet it is inevitable that some of the packets being sent will be lost or in time sensitive cases, delayed beyond their usefulness. This can be especially troubling in the context of Voice over Internet Protocol (VoIP) technologies. As the information is being used in real time, it is not possible to have any missing data be sent again as by the time it arrives, the period of time in which it could be used has passed. This means having some kind of technique to fill in these blank spaces of data is necessary for VoIP.

Currently, there are a number of techniques in use by different technologies. The simplest of which is insertion methods. These simply replace the lost packet information with other sounds, such as silence, noise or repeating previous sounds. Additionally there are more complex techniques such as waveform matching or models to recreate the missing segments.

The goal of this project is to choose a few of these techniques and simulate them on test examples of audio and compare the differences.

Timeline

Week	Work to be Done
Weeks 1&2	Researching which techniques to test and finding audio samples to use for testing.
Weeks 3&4	Begin creating audio file examples which demonstrate different packet loss concealment techniques.
Weeks 5&6	Create the final project report.

Previous Work Done

I was able to find two papers which did work similar to what was proposed for VoIP. Although, even the most recent of these was released nearly twenty years ago.

<https://ieeexplore.ieee.org/document/1235908/>

<https://escholarship.mcgill.ca/concern/theses/xg94hr47d>

The field has seen large progress since then and I feel revisiting the topic with newer techniques is worthwhile.

Deliverables

- Final report
- Log book
- Source code for creating comparison audio files
- Audio files used for comparing techniques

Website

<https://jessebrowell.github.io/Packet-Loss-Concealment-Comparison/>

References

T. Bäckström, "Packet loss and concealment," *Signals and Communication Technology*, pp. 161–184, 2017.