

The Speex Codec Manual

(version 1.2-beta1)

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JTJ/R9 9.93-323.759 -34.Tf 1 0 0 1 872.4-1104738(6)0.897516(8)H_p-194E(678)(47(7))L(88)(95)(96)(5)(16.89)+90088R(6)289E(6)o.663935(6)-5.8887(s)

2 Codec description

This section describes the main features provided by Speex.

2.1 Concepts

He0.9642516(r)-4.2603(e)-338.886(a)-1.66516(r)-4.2603(e)-338.886(d)-5.5944(o)-5.88993(m)-4.9244(e)-350.93toncep manual. Emphass is placed on he mpeex features.

while fricatives (e.g. s,f sounds) can be coded adequately with less bits. For this

Algorithmic delay

Every speech codec introduces a delay in the transmission. For Speex, this delay is

3 Compiling

Compiling Speex under UNIX or any platform supported by autoconf (e.g. Win32/cygwin) is as easy as typing:

```
% ./configure [options]
% make
% make install
```

The options supported or d Soe5 0 Td [(c)-1.66516(e)12-33969855 0 Td [(c)-1.66393(o)-5.89115(fi-174.473(n)-5.8887(

- rate n** Force decoding at n Hz sampling rate
- packet-loss n** Simulate n % random packet loss
- V** Verbose operation, print bit-rate currently in use
- help (-h)** Print help
- version (-v)** Print version information


```
speex_echo_cancel(echo_state, input_frame, echo_frame, output_frame, residu.8377(s)4)s
```

where `input_frame` is the audio as captured by the microphone, `echo_frame` is the signal that was played in the speaker (and needs to be removed) and `output_frame` is the signal with echo removed. The `residu` parameter is optional (you can set it to

5.6 Mode queries

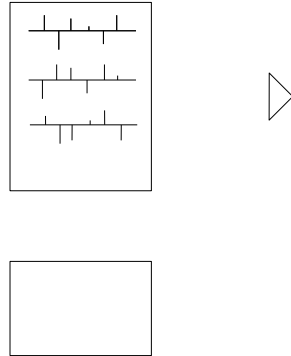
SPEEX_PREPROCESS_GET_DEREVERB_LEVEL

SPEEX_PREPROCESS_SET_DEREVERB_DECAY

SPEEX_PREPROCESS_GET_DEREVERB_DECAY

5.8 Packing and in-band signalling

Code	Size (bits)	
------	-------------	--



-30 -

-

-40 -

-

8 Speex narrowband mode

This section looks atow Speex works for narrowband (8kHz sa



Mode	Bit-rate (bps)	mflops	Quality/description
0	250	N/A	No transmission (DTX)
1	2,150	6	Vocoder (mostly for comfort noise)
2	5,950		

A *FAQ*


```
inFile = argv[1];
fin = fopen(inFile, "r");

/*Initialization of the structure that holds the bits*/
speex_bits_init(&bits);
while (1)
{
```



```

+++++
|           one or more frames of Speex ....           |
+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           one or more frames of Speex ....           | padding |
+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

4. RTP Header

```

0               1               2               3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
                                     -+---+---+---+---+
+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

specification is two [2].

Padding (P): 1 bit


```

|V=2|P|X|  CC  |M|      PT      |          sequence number          |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                                timestamp                                |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|          synchronization source (SSRC) identifier          |
+=====+=====+=====+=====+=====+=====+=====+=====+

0              1              2              3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+=====+=====+=====+=====+=====+=====+=====+=====+
|
|          contributing source (CSRC) identifiers          |
|
|                                ...                                |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                                ..speex data..              |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|
|                                ..speex data..              |0 1 1 1 1|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

7. Multiple Speex frames in a RTP packet

Speex codecs [9] are able to detect the the bitrate from the payload and are responsible for detecting the 20 msec boundaries between each frame.

Herlein, et al.

Expires October 3, 2005

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Internet-Draft

draft-herlrin-speex-rtp-profile-02

April 2005

```

|      synchronization source (SSRC) identifier      |
+=====+
|      contributing source (CSRC) identifiers         |
|                                                     |
|      ...                                           |
+---+---+---+---+---+---+---+---+---+---+---+---+
+---+---+---+---+---+---+---+---+---+---+---+---+
|                                                     |
|      ..speex data..                               |
+---+---+---+---+---+---+---+---+---+---+---+---+
|      ..speex data..      |      ..speex data..      |
+---+---+---+---+---+---+---+---+---+---+---+---+
|      ..speex data..                               |
+---+---+---+---+---+---+---+---+---+---+---+---+

```

8. MIME togtrisation of Speex

Security Considerations:

See Section 6 of RFC 3047.

Interoperability considerations: none

Published specification:

Applications which use this media type:

Additional information: none

Person & email address to contact for further information:

Greg Herlein <gherlein@herlein.com>

The "ptime" attribute is used to denote the packetization interval (ie, how many milliseconds of audio is encoded in a single RTP

discard packets from undesired sources, but the processing cost of

Terminal Equipment", ITU-T Recommendation H.245.

[7] Schulzrinne, H. and S. Casner, "RTP588(R)605(P54.8377(r)4.83481(o)4.8377(f)4.8377(i)4.

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aliceythilhl1

ayu0c

us

ay-
ay

y-ce022
s-
29(i)0.966516(c)-1.g816(c)-189920(c)40781w26(e10-5.88993(-)-4.2687(c)-1.