

# Time-stretched Audio and Personalized Provision in Instructor-led Digital Audio Labs

Nerallt 2009



# Backdrop: Technology

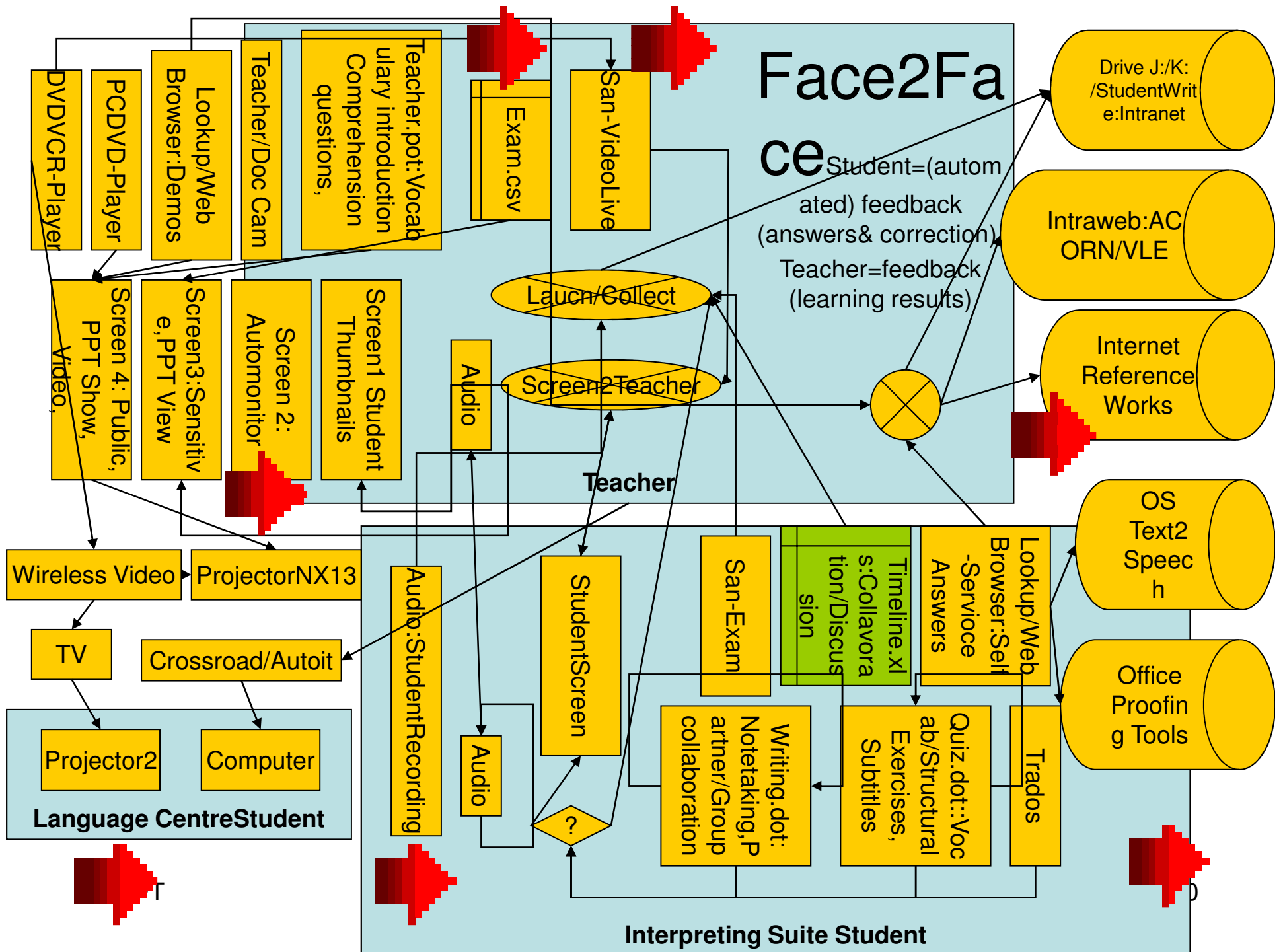
- **Computerized classrooms**
- Teaching materials repositories
- **networked digital media**
- **Pervasive computing  $\leftrightarrow$  Language “Labs”**
  - underused, not routinely mastered, isolated (class “visits” lab twice per term)
  - $\leftrightarrow$  more digital materials, better integration with textbooks



# Backdrop: SLA needs

- Do more with less
- Growing languages
- Shrinking languages
- Workarounds
  - Common: Christina
  - promising





# Student Writing

- Free form writing
  - Instructor monitors, e.g. during note taking
  - Students collaborate, e.g. when composing

The image displays four screenshots of student writing on a Sanako screen, arranged in a 2x2 grid. Each screenshot shows a German text with linguistic annotations in blue and red. The text is a dialogue between two characters, with timestamps and annotations for grammatical and lexical features.

**Top Left Screenshot (LANGLAB06: Student):**

Vertrauenstest. / 8:17: Ach du Scheiße. / 8:18: Jetzt fällt dir auch nix mehr ein. / 8:21: Irgendwann weißt auch du keinen Ausweg mehr. / 8:24: nicht erst **when (conjunction, temporal)** du stirbst. Das kommt viel früher. / 8:26: Jetzt stehste da, **colloquial: As if!** Liebe kann alles. / 8:28: **conjunction, but** nicht in zwanzig Minuten hunderttausend Mark herzaubern. / 8:31: - Zwanzig Minuten? - Zwanzig Minuten, Lola. / 8:33: Ronnie hat gesagt, um zwölf

**Top Right Screenshot (LANGLAB08: Student):**

Scheiße. / 8:7: **How much?** war's denn... in der Tasche mein ich. / 8:10: - Hunderttausend. - Was? / 8:14: Hunderttausend. Sag ich ja, Vertrauenstest. / 8:17: Ach du Scheiße. / 8:18: Jetzt fällt dir auch nix mehr ein. / 8:21: Irgendwann weißt auch du keinen Ausweg mehr. / 8:24: nicht erst **when (conjunction, temporal)** du stirbst. Das kommt viel früher. / 8:26: Jetzt stehste da, **colloquial: As if!** Liebe kann alles. / 8:28: **conjunction, but**

**Bottom Left Screenshot (LANGLAB11: Student):**

**temporal)** du stirbst. Das kommt viel früher. / 8:26: Jetzt stehste da, **colloquial: As if!** Liebe kann alles. / 8:28: **conjunction, but** nicht in zwanzig Minuten hunderttausend Mark herzaubern. / 8:31: - Zwanzig Minuten? - Zwanzig Minuten, Lola. / 8:33: Ronnie hat gesagt, um zwölf am Wasserturm. Gleich um die Ecke. In zwanzig Minuten / 8:36: - du mußt abhauen, Manni. - Komm, vergiß es. /

**Bottom Right Screenshot (LANGLAB16: Student):**

**temporal)** wenn du stirbst. Das kommt viel früher. / 8:26: Jetzt stehste da, **colloquial: As if!** Liebe kann alles. / 8:28: **conjunction, but** nicht in zwanzig Minuten hunderttausend Mark herzaubern. / 8:31: - Zwanzig Minuten? - Zwanzig Minuten, Lola. / 8:33: Ronnie hat gesagt, um zwölf am Wasserturm. Gleich um die Ecke. In zwanzig Minuten / 8:36: - du mußt abhauen, Manni. - Komm, vergiß es. /



# Time-stretching: Increase & Textbook Exercises

- Listen & Repeat (“Model imitation”)
  - Obvious:
    - [ueb1b1\\_stretch\\_gliding\\_66-133](#) (3:42)
  - Pedagogical
    - Before: [ueb6a](#) (5:24)
    - After:  
[ueb6a\\_s=80to120;i=t;1=c;2=i=l&r;3=m;4=b=15;5=i=f,6=b=3](#) (5:38)
- Listen & Respond (“Question/response”)
  - Before: [ueb8b.mp3](#) (3:33)
  - After:  
[ueb8b\\_s=80to120;i=t;1=i=ltr;2=c;3=b=15;4=i=f,5=b=3;6=i=cf;7=s](#) (3:42)



# Shareware CoolEdit2000 → Adobe Audition

- Since 1998
- Scriptable (scp)
- Reusable operations
  - Stretch
  - Normalize
  - Etc.

```
drills.scp

Title: variable_speed_80_120
Description:
Mode: 2
Undo: 1

Selected: none at 0 scaled 9550080 SR 44100
Freq: Off
cmd: Channel Both

Selected: 0 to 9550079 scaled 9550080 SR 44100
Freq: Off
Comment: Time/Pitch\Stretch
cmd: {E3DCDD44-D903-4450-8F62-4ACD1B252BF3}
1: 0.8
2: 1.2
3: 1
4: 0
5: 48
6: 2
7: 0.29
8: 9
9: 10
10: 1
11: 0
12: 1.25
13: 0.833333
14: 4

Freq: Off
End:

Title: normalize
Description:
Mode: 2
Undo: 1




Selected: none at 0 scaled 9329500 SR 22050
Freq: Off
cmd: Channel Both

Selected: 0 to 9329499 scaled 9329500 SR 22050
Freq: Off
Comment: Amplitude\Normalize
cmd: {7EC45406-CFB6-4C54-99B9-84CE080C1914}
1: 1
2: 0
3: 0
4: 1
5: 0
```



# Time-stretching & Authentic materials

- Live Players: E.g. Windows Media Player, VLC Player, Language Lab Players (Sanako)
- Persisted (= teacher, not student controls)
- Example:
  - Before: [MaryJoFoleyWatch\\_ch9.wma](#)
  - After: [MaryJoFoleyWatch\\_ch9\\_085.wma](#)

 MaryJoFoleyWatch_ch9.wma	7,900 KB	Wi...	11/3/2008 3:35 PM	0:16:39
 MaryJoFoleyWatch_ch9_1.wma	7,160 KB	Wi...	1/14/2009 6:43 AM	0:15:05
 MaryJoFoleyWatch_ch9_085.wma	8,419 KB	Wi...	1/13/2009 9:06 AM	0:17:45







# MS Windows Media Encoder: Applications

- Screencasts
- Lecture Capture
- Network streaming



# Mock conference recording

- Elmo, dis6000, pc win xp2, wm encoder, dvrnstoolbox
- Digital, motorized pan and zoom camera, dis delegate microphones
- Camera positioning (back of table, behind projector box)





# CCTV



DRAFT



TRP,Language Services 12



1 trpOCRTextCapture.au3 2 test.au3 3 trprecord.au3

```

151 Dim $actiontyperecordingvideofileStatus = 0
152 Dim $group_action = GUICtrlCreateGroup("Action", 10, 5, 780, 160); creategroup seems just a canvas in the gui
153 GUIStartGroup()
154 Dim $actiontyperecordingaudioliveCtrl = GUICtrlCreateRadio("Audio Live", 20, 20, 140, 15)
155 Dim $actiontyperecordingvideoliveCtrl = GUICtrlCreateRadio("Video Live", 20, 50, 140, 15)
156 Dim $actiontyperecordingaudiofileCtrl = GUICtrlCreateRadio("Audio with File,Path:", 20, 80, 140, 15)
157 Dim $actiontyperecordingvideofileCtrl = GUICtrlCreateRadio("Audio w/ Video File,Path:", 20, 110, 140, 15)
158 GUICtrlSetState($actiontyperecordingvideoliveCtrl, $actiontyperecordingvideoliveStatus)
159 GUICtrlSetState($actiontyperecordingaudioliveCtrl, $actiontyperecordingaudioliveStatus)
160 GUICtrlSetState($actiontyperecordingaudiofileCtrl, $actiontyperecordingaudiofileStatus)
161 GUICtrlSetState($actiontyperecordingvideofileCtrl, $actiontyperecordingvideofileStatus)
162 ; todo: enable this if $actiontyperecordingaudiofile chosen

```

TRPRecord:Set Options, press Start to begin

Action

☐ Audio Live

Start

Stop

☐ Video Live☒ Audio with File,Path:

\\lou.ac.uk\lou\$\multimedia student\mmedia\mmedia1\lanquage services\configuration

☐ Audio w/ Video File,Path:

\\lou.ac.uk\lou\$\multimedia student\mmedia\mmedia1\lanquage services\configuration

280,1

```

176 GUICtrlSetState($inputvideofilepathCtrl, $GUI_DISABLE)

```

```

177 GUISetState()

```

```

178 While 1

```

```

179     $msg = GUIGetMsg()

```

```

180     Select

```

```

181         Case $msg = $GUI_EVENT_CLOSE

```

```

182             Exit ; could do ExitLoop, but probably better to exit

```

```

>"C:\Program Files\AutoIt3\SciTE\AutoIt3Wrapper\AutoIt3Wrapper.exe" /run /prod /ErrorStdOut /in "G:\myfiles\bureaucracy\proposals\interp:
+>19:35:48 Starting AutoIt3Wrapper v.1.10.1.13 Environment(Language:0409 Keyboard:00020409 OS:WIN_XP/Service Pack 2 CPU:X86 ANSI)
>Running AU3Check (1.54.13.0) from:C:\Program Files\AutoIt3
+>19:35:51 AU3Check ended.rc:0
>Running: (3.2.12.1):C:\Program Files\AutoIt3\autoit3.exe "G:\myfiles\bureaucracy\proposals\interpreting\digitization\local_hacks\recordi

```

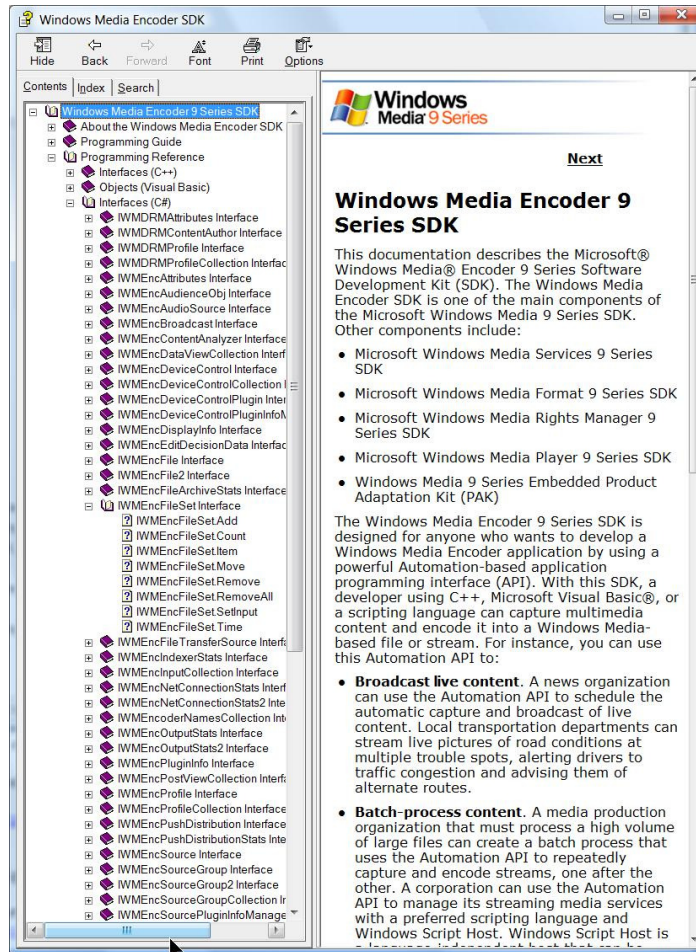
# Digitized Assessment

- Autolt3
  - ← Auralog Automation Paper (Eurocall 2008)
  - → General RAD scripting of MS-Windows, including COM





# MS Windows Media Encoder: COM Programming



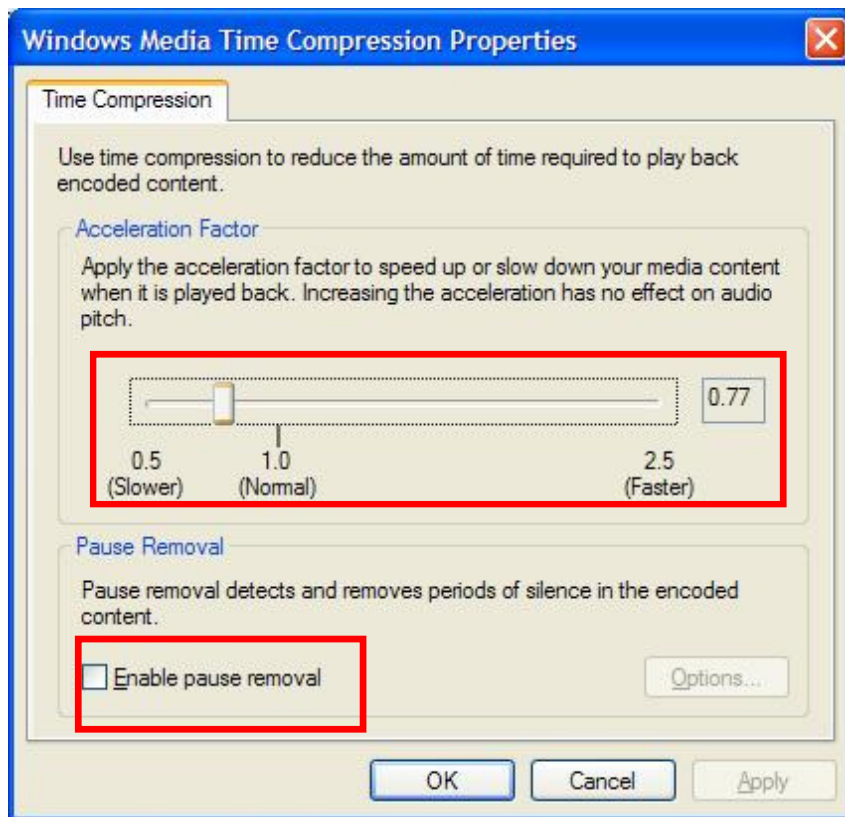
- ← SDK for managed languages of .Net
- → trpwmeaudio.sln

```
public void pausefindingEncoding(St  
  
//////////////////////////////////// be  
public void segmentstretchingEncodi  
// no Double segmentstartpoint para  
// no String outputfilenamemarker,  
assemble the sourcegroupcollection for a co  
public void fileassemblingEncoding(  
int increaseratio)...)
```



# MS Windows Media Encoder: Advanced Applications

- Pause Detection/Removal
- Time-stretching








# Pauses vs. Speech in WM

## Encoder: Removal

- Example:
  - Before: [MaryJoFoleyWatch\\_ch9.wma](#)
  - After: [MaryJoFoleyWatch\\_ch9\\_1.wma](#)

 MaryJoFoleyWatch_ch9.wma	7,900 KB	Wi...	11/3/2008 3:35 PM	0:16:39
 MaryJoFoleyWatch_ch9_1.wma	7,160 KB	Wi...	1/14/2009 6:43 AM	0:15:05
 MaryJoFoleyWatch_ch9_085.wma	8,419 KB	Wi...	1/13/2009 9:06 AM	0:17:45



# Pauses vs. Speech in WM

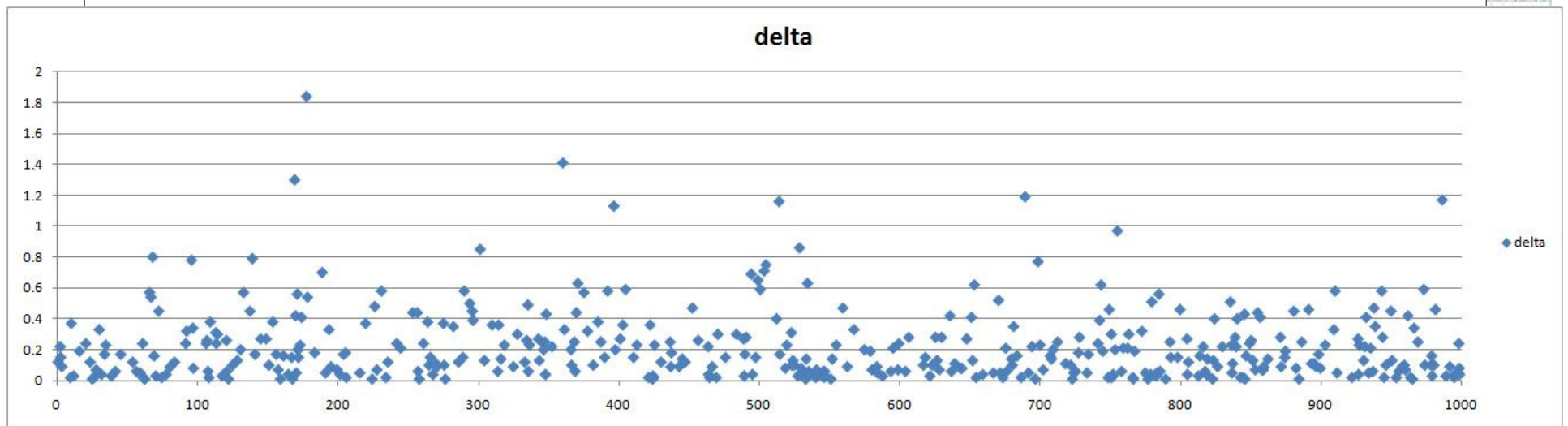
## Encoder: Detection

- Sample Interview Log-1
- Graphical Analysis 1+2
- Numerical Analysis

		start	end	delta
		0.17	0.29	0.12
		1.58	1.8	0.22
duration(s %	#	length%		length(s)
>1	0.02	7	0.02	9.2
>0.8	0.02	10	0.03	11.88
>0.6	0.05	23	0.05	21.02
>0.4	0.16	89	0.1	43.63
>0.3	0.24	103	0.13	55.54
>0.2	0.42	178	0.17	73.41
<0.4	0.84	355	0.12	50.02
<0.2	0.58	248	0.05	20.24

delta

delta



DRAFT



TRP, Language Services, 637

58.82	58.87	0.05
60.37	60.61	0.24
60.8	60.82	0.02

# Pauses vs. Speech in WM

## Encoder: Stretching I

- Pause finding encoding
  - Distinguish between pause and non-pause segments
- General Segments stretching
  - And splitting
- Extra pause segments stretching



# Pauses vs. Speech in WM Encoder: Stretching II

The screenshot shows the Microsoft Visual Studio IDE with the following components:

- File Explorer:** Shows the project structure with files like `fileIO.cs`, `DialogBox.cs`, `Program.cs`, `segmentstretchingjobitem.cs`, and `TimeStretcher.cs`.
- Code Editor:** Displays the `TimeStretcher.cs` file. The code is in C# and includes comments in German. A yellow highlight is on line 255: `wrappedTimeStretcher.segmentstretchingEncoding(tmpfolderpath, sourcefilenamehashed, sourcefileextension, s);`. The code is currently at line 266.
- Exception Dialog:** A **COMException was unhandled** dialog box is open. It states: "No matching element is found in the list." It includes troubleshooting tips and actions like "View Detail..." and "Copy exception detail to the clipboard".
- Locals Window:** Shows the following variables:

Name	Value	Type
sourcefilepath	"C:\\tmp\\trpwmeaudio\\MaryJoFoleyWatch_ch9.mp3"	string
sourcefilenamehashed	"AWe56ToMV8U5AZYCbNikY9abmEoHkf"	string
tmpfolderpath	"trptmp"	string
sourcefilepathhashed	"C:\\tmp\\trpwmeaudio\\trptmp\\AWe56ToMV8U5AZYCbNikY9abmEoHkf.i.q"	string
wrappedTimeStretcher	{System.Runtime.Remoting.Proxies.__TransparentProxy}	trpwm
pausestretchrationmin	0	int
- Call Stack:** Shows the following stack frames:

Name	Location
trpwmeaudio.exeltrpwmeaudio.TimeStretcher.invoker()	Line 255
trpwmeaudio.exeltrpwmeaudio.TimeStretcher.TimeStretcher()	Line 185 + 0x8 bytes
trpwmeaudio.exeltrpwmeaudio.Program.Main()	Line 27 + 0x15 bytes
[External Code]	
- Taskbar:** Shows the Windows taskbar with various application icons and the system clock at 4:11 PM.

# Outlook

- Pause – Analysis
  - Using subtitled/transcribed audio
  - Experimenting with stretching thresholds
- Time-stretching
  - convenience:
    - GUI Options
    - file system watcher
  - speed: parallel on single and multiple (lab PCs)
- Video?
- Application in teaching: Personalized Provision



# Questions?

