

CyberAVI

COLLABORATORS

	<i>TITLE :</i> CyberAVI	
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>
WRITTEN BY		August 25, 2022
<i>SIGNATURE</i>		

REVISION HISTORY

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Chapter 1

CyberAVI

1.1 main

CyberAVI 1.5

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CyberAVI is a fast AVI animation player for 020+ machines with AmigaOS 3.0 or higher and a graphic board with CyberGraphX or AGA.

Background

Requirements

Installation

Supported encodings

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Operation

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To do

XAnim

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Credits

Disclaimer
CyberAVI is Freeware. You don't need to send money or anything ←
else (but if you
really want to I won't stop you from doing that :). But I would be glad if you
send
me
an EMail if you like CyberAVI.

1.2 background

The main reason why CyberAVI was developed was because all existing animation players for AVI files were either far too slow or didn't support my graphic board in the way I wanted. All ports of XAnim supported only very few file formats and were "optimized" for the original Amiga graphic chipset.

So I planned to write such a piece of software myself. Because I own a CyberVision64 graphic board it was so easy to support the different file types with display depth >8 bits.

CyberAVI was developed on:

- A4000/030 (yes, just an MC68EC030 at 25MHz)
now equipped with CyberStrom MK2 68060 at 50MHz
- AmigaOS 3.1
- 2MB ChipRAM
- 16MB FastRAM
- FastLaneZ3 SCSI host (disk capacity about 1.3GB)
- CyberVision64 with 4MB graphic memory
- Philips 17B 17" monitor

1.3 requirements

minimum hardware requirements:

- Amiga with AmigaOS 3.0 (V39)
- MC68020
- graphic board (eg. CyberVision64, Picasso II, Retina, etc) or AGA chipset
- 2MB of FastRAM, 512K of ChipRAM

software requirements

- CyberGraphX 2.16 or higher if used with a graphic board
- asyncio.library V37 (included)
- SetPatch 43.4 or higher if used with AGA (included)

recommended hardware requirements:

- Amiga with AmigaOS 3.1 (V40)
 - MC68040 at 25MHz minimum
 - graphic board with CyberGraphX
-

I recommend a registered version of CyberGraphX since the unregistered version doesn't support 24 bit screenmodes. So no screenmode requester will appear since there are no screenmodes to select!

Up from version 1.5 there is support for AGA, but I still recommend a graphic board with CyberGraphX, because OS3.x's graphics.library has some bugs and display on AGA is not just slow, it is DAMN slow! Please don't blame me for this...

IMPORTANT:

Due to several bugs in graphics.library V39 and V40 the display will become screwed up during playback on AGA screens. These errors don't occur if SetPatch 43.4 is installed or if playback is done on a CyberGraphX screen.

1.4 install

CyberAVI is very simple to install.

Just copy asyncio.library to LIBS: and copy CyberAVI itself to where ever you want to.

If you have no graphic board or intend to use the AGA option even with graphic board you should install SetPatch 43.4 to C:, too.

1.5 encoding

CyberAVI's implementation of AVI decoding is based on the source code to Mark Podlipec's

XAnim
program.

I will add more decoders as I need them and get any animations to test them.

Supported encodings until now:

Video:

Microsoft Video 1	(CRAM)	8/16 bit
Radius CinePak	(CVID)	24 bit
Microsoft RGB	(RGB)	8/16/24/32 bit
Microsoft RLE8	(RLE8)	8 bit
IBM Ultimotion	(ULTI)	16 bit

Audio:

PCM	8 bit	Mono/Stereo
PCM	16 bit	Mono

I am still looking for other encodings. Please contact me

if you have an animation with one of the following compressions:

- Microsoft RGB with 4 bits
- RLE4 (Microsoft RLE4)
- JPEG (JFIF JPEG)
- MJPG (Motion JPEG)
- XMPG (Editable MPEG)
- IJPG (Intergraph JPEG)
- CYUV (Creative Technology CYUV)
- YUV9 (Intel Raw YUV9)

You can send me any animation with one of the above compressions. Just compress it (with e.g. LhA) and send it uuencoded to one of my EMail addresses.

My worst problem is to support the Intel Indeo codec. Intel charges \$5000 (in words: five thousand US-Dollars) for a licence to their source code. So it seems to be impossible that Indeo is ever supported :(

1.6 shell

The command template for CyberAVI is...

```
FILES/M,DELAY/K/N,BUFFERSIZE=BUF/K/N,PRIORITY=PRI/K/N,SOUND/S,LOOP/S,
SCREENMODEREQ=SMR/S,AGA/S,FORCE24/S,MAXFPS/S,NOINDEX/S,SKIP/S,STATS/S,
QUIET/S,DEBUG/S
```

FILES One or more AVI files you want to view. If you don't specify a filename an ASL file requester will pop up to let you choose one or more animations. Wildcards, like ?, #? or *, are allowed.

DELAY CyberAVI will wait the given amount of seconds before displaying the first frame. This is very useful if you have a slow synchronizing monitor, so you don't miss a few frames at beginning of the animation. Default value is 1 second. The given value has to be between 0 and 10.

BUFFERSIZE This option sets the buffersize for asynchronous reading. asyncio.library allocates two buffers of the given size! The maximum value possible is 1048576 which would mean a buffer of 1GB of memory! Default value is 64K per buffer. The given value has to be between 1 and 1048576.

NOTE:

This value is interpreted as the given amount of blocks of 1024 bytes. So a value of 50 means 51200 bytes and NOT 50 bytes!!

- PRIORITY** This option sets the priority of the subtask for decoding the video data. You should set a value higher than the filesystem tasks priority to have smooth playback. Default value is +15. The given value has to be between -128 and +127.
- SOUND** Enables sound playback. If audio encoding is unknown sound playback will be switched off for the current animation. If sound listens bad you should try the SKIP (see below) option.
- NOTE:**
This option will have no effect on a DraCo, because this machine doesn't have the Amiga custom chips, and also no audio.device.
- LOOP** Enables looping of the animation when it finishes. The default is to exit at the animations end.
- SCREENMODEREQ** Enables screenmode requester. If the screen is to be opened for playback you can choose a screenmode here. This requester will appear everytime CyberAVI tries to open a screen.
- AGA** Enables AGA support. This options doesn't need to be specified if you don't own a graphic board. CyberAVI will recognize itself if either AGA or CyberGraphX is available. It is just meant to force playback on AGA if you want. If this option is specified or only AGA chipset is available all frames will be reduced to 256 colors without doing any dithering, just color reduction.
- NOTE:**
Do not expect too much from AGA support. AGA chipset is damn slow compared to recent CyberGraphX compatible boards. And since there are still some bugs in OS3.x's graphics.library display may look corrupt on AGA screens.
- FORCE24** Forces 16 bit animations to be displayed on a 24 bit screen. This may increase playback speed a bit.
- NOTE:**
If CyberAVI is running on a non-CyberGraphX system this option is totally useless and will be ignored.
This option only works for 16 bit animations.
For 8 bit animations this option will be ignored!!
For 24 bit animations this option is (of course) senseless.
- MAXFPS** Set playback speed to maximum possible. In fact a delay of 0 seconds per frame is set, so there won't be any delay and playback will be as fast as your machine can do.
- NOINDEX** This switch forces CyberAVI to read the file "as is". Every AVI
-

file can have an optional index describing in which sequence the file has to be played. If you set this option the index will be ignored and the animation will be played in the sequence the frames appear in the file.

- SKIP This option enables skipping of video chunks if playback speed is too slow. SKIP will only work if the animation's index can be used (index available and NOINDEX is NOT specified). Skipping will be done to the next available keyframe to avoid "humpling" of sound. If there is no "next" keyframe and your machine is too slow there is no way to play sound correctly.
- STATS This option causes some statistical information to be displayed after playback. This will include the number of frames, the number of displayed frames, expected playback speed and real playback speed.
- QUIET This option will switch off all message printing. This does not affect error messages!
- DEBUG Enables debug mode. When switching debug mode on CyberAVI will print much stuff to the output window describing the work being done.

The FRAMESPERSEC switch doesn't exist anymore since there was no real reason for its existence. Or does anybody view his AVIs with 2 fps?? :)

Examples:

```
CyberAVI blabla.avi
```

This will just show blabla.avi without sound. The index will be used if it is available.

```
CyberAVI blabla.avi sound noindex maxfps
```

This will show blabla.avi with sound (if available) and at maximum possible speed. No index will be used.

```
CyberAVI blubb.avi screenmodereq buffersize=128 pri=5
```

This will show blubb.avi, but before playback starts CyberAVI will ask you for a screenmode. The subtask's priority will be set to 5 and a buffersize of 128K is used for reading.

```
CyberAVI brabbel.avi delay=5 loop stats
```

This will show brabbel.avi with a delay of 5 seconds before starting playback. The loop option causes CyberAVI to restart playback as soon as the animation's end is reached. Playback can be aborted by pressing a mousebutton, ESC or CTRL-C. After playback some statistical data will be shown.

```
CyberAVI veryslow.avi skip quiet
```

This will show veryslow.avi without printing any information. If your machine isn't fast enough then delayed frames will be skipped if possible.

1.7 workbench

The following ToolTypes are available for CyberAVI's and any AVI animation's ↔

icon:

WINDOW This specifies the output window CyberAVI uses. "NIL:" is the default value, so no text output will be visible. This option only exists if CyberAVI was started from Workbench

DELAY	\	
BUFFERSIZE		
PRIORITY		
SOUND		
LOOP		
SCREENMODEREQ		
AGA		These options are identical with the shell options
FORCE24	'	so please have a look there for further explanation.
MAXFPS		
NOINDEX		
SKIP		
STATS		
QUIET		
DEBUG	/	

NOTE:

The DEBUG option only makes sense in combination with the WINDOW option. So if you specify DEBUG but not WINDOW you won't see any debug information.

Any occurrence of the PRIORITY ToolType will just change the subtask's priority to the given value. The first occurrence will set the initial priority.

1.8 operation

CyberAVI will try to show the animation at the correct speed, but ↔
this mostly
depends on your machine. Faster processors (e.g. MC68040 or MC68060) and fast
graphic board will result in more smooth playback.

If you did not specify the

NOINDEX

option CyberAVI will try to read the index
in every AVI file. This may take a few seconds and depends on how fast you
machine is and how big the animation is.

To quit CyberAVI or stop playback you can do one of the following things:

- press either mousebutton or ESC
This will just terminate playing the current animation and is the only way
to quit CyberAVI if the
LOOP
option has been specified.
- press CTRL-C
This will quit CyberAVI completely
- send a Break to one of CyberAVI's tasks with tools like Scout or XOper
This is the same as pressing CTRL-C

During playback you can use the function keys to adjust playback speed:

- F1 - as fast as possible, same as
MAXFPS
option
- F2 - 60 frames per second
- F3 - 30 frames per second
- F4 - 24 frames per second
- F5 - 15 frames per second
- F6 - 12 frames per second
- F7 - 10 frames per second
- F8 - 5 frames per second
- F9 - 1 frame per second
- F10 - speed specified in AVI file

The real speed you get may differ from the speed it should be, but this depends
on you machine. The faster you machine is, the more exact playback speed will
be.

1.9 faq

Q: Why is "Intel Indeo" not supported? Most of my AVIs are ↔
saved with this
encoding!

A: Intel charges \$5000 (or more) for a non-disclosure agreement and the source to their Indeo technology. I am just a student and can't afford so much money. Now you can imagine?

Q: Why is the ECS chipset not supported?

A: There are some very simple reasons:

CyberAVI was originally designed just to run on CyberGraphX systems. From V1.5 on CyberAVI will also run on AGA machines and all graphics are reduced to 256 colors. AGA chipset is a lot faster than ECS chipset, but access to ChipRAM is still very slow. Thus playing AVIs on AGA machines is MUCH slower than on CyberGraphX machines, even if you have a fast CPU, like MC68040 or MC68060. Watching AVIs on AGA machines is really no fun. So, what would you expect from ECS?

Q: Why does the sound sometimes listen very bad?

A: Either your machine isn't fast enough to decode the video frames in time and so the sound can't be played correctly, or it is my fault. Sound support still is not perfect. You can try the

SKIP

option to allow skipping of video frames if your machine is not fast enough.

Q: After playing a huge animation with index it takes some time until my Shell's prompt appears again. Are there any bugs when playing such huge animations??

A: Hey, please give Oberon's runtime system some time to free the memory occupied by the index :) This is definitely NO bug and only appears with large indices.

Q: CyberAVI doesn't display anything or crashes the machine!

A: Please

contact me

! It seems you have found a bug in CyberAVI.

Q: CyberAVI refuses to work on my A500 with MC68000/7 bought back in 1988! Why?

A: <sigh>!!

Q: CyberAVI refuses to work on my 200MHz Pentium with Win95? Should I buy a faster processor and more memory?

A: YOU DAMN IDIOT!!

1.10 contact

My addresses:

Snail mail:

Thore Böckelmann
Entgelhof 11
D-32278 Kirchlengern Tel: +49-5744-1309 and +49-5744-1323
Germany

Thore Böckelmann
Stephanusstraße 82
D-33098 Paderborn Tel: +49-5251-730837
Germany

Electronic mail:

tboeckel@uni-paderborn.de
tboeckel@guardian.fido.de
FidoNet: 2:2432/230.15
AmigaNet: 39:170/410.15

NOTE:

I prefer guardian.fido.de and my FidoNet account for "just talking" and bugreports. If you want to send any uuencoded stuff (like animations for testing) then PLEASE send them to tboeckel@uni-paderborn.de, because I have (nearly) unlimited mailquota at the university.

The most recent version of CyberAVI is always available by filerequest at Blind Guardian BBS. Just request "CyberAVI.lha" at one of the following lines:

Line 1: 38400 - 64000 Elink 310 +49-5742-920340 (2:2432/231.0)
Line 2: 2400 - 28800 Elsa TQV +49-5742-920341 (2:2432/230.0)
Line 3: 2400 - 19200 ZyXEL EG+ +49-5742-920342 (2:2432/232.0)

1.11 history

V1.0:

17-May-96 - first release on Aminet

V1.1:

19-May-96 - corrected version string
 now it should look like "CyberAVI Vx.x (date)"
 - timer checking implemented
 now playback speed should be the same on MC68030 and MC68060

- added user adjustable playback speed
- added startup delay
- added user adjustable buffersize for asynchronous I/O.

26-May-96 - added support for RGB and RLE compression
- small speed improvements

28-May-96 - playback may now be aborted by pressing any mousebutton
- reduced CVID memory usage a lot by decreasing maximum allowed strip count from 16 to 4. This may lead to incompatibility with some animations, but I never saw any animation with more than one strip. Please report your experiences with this.

V1.2:

31-May-96 - fixed a bug that caused "memory header to located" gurus
- again some small speed improvements

2-Jun-96 - added screenmode requester option
- added file requester
if CyberAVI is called without a filename a requester will pop up for selection

5-Jun-96 - fixed a bug that caused crashes, when CyberAVI was called with non-AVI-files (released as V1.2a)

V1.3:

10-Jun-96 - added support for 32bit RGB animations
- raised default buffer size for asynchronous reading to 64K
- many people complained that CyberAVI did not correctly open its screen. I hope this is fixed now.

14-Jun-96 - fixed a bug in RLE8 decoding. Thanks to Steve Cutting for his really BIG RLE8 animation to find this bug.

16-Jun-96 - seems I have found a bug in MainActors AVI saver. MA saves a buffersize of 0 instead of the correct value. This lead to crashes before.
- improved sound support. I hope it listens better now.

V1.4:

1-Jul-96 - started to rewrite CyberAVI completely
rewrite is really necessary because the source code had become very confusing and weird :)

7-Jul-96 - why are 00xx chunks used for video data???? Very strange.
Much thanks to Maurizio Lotauro for the example animations (swing.avi and baseball.avi).

11-Jul-96 - rewrite is mostly done and playback should be much more stable now
- now a subtask is used to decode the video data. This sped up playback speed about 10% on my system. Its priority can be changed with the

PRIORITY

- option
 - fixed a big bug when width or height of a video frame had to be rounded to multiples of 4 or 8. Former versions didn't allocate enough memory, so innocent memory could be overwritten while decoding data
 - many minor bugfixes
 - removed FRAMESPERSECOND option since there was no real reason for it (who would play anims at eg. 2 fps??) Therefore the switch
 - MAXFPS
 - was introduced.
 - 12-Jul-96
 - now AVIs will be played "by index". If an index chunk is found it will be used to determine the sequence in that the animation will be played.
 - added
 - NOINDEX
 - switch to force ignorance of the index chunk
 - 14-Jul-96
 - added support for 8 bit RGB anims. Thanks to Joachim Greve for for the example animations.
 - 17-Jul-96
 - improved recognition of chunks. Unknown video chunks should not appear anymore (eg: 00xx, 00id, etc). Thanks to Ingo Jürgensmann for his animation with these strange chunks.
 - added support for startup from Workbench. All ToolTypes should work exactly the same way as the Shell options do.
 - 18-Jul-96
 - added
 - SKIP
 - switch.
 - This allows skipping of video frames if necessary and possible
 - 27-Jul-96
 - fixed problem with shrug display of some animations. Thanks to Manuel Schlegel for his sample animations.
 - removed some MungWall hits
 - disabled audio subtask because of many problems while playback
 - 1-Aug-96
 - I hope all sound problems are fixed now. A big "Thank you" to Thomas Wenzel for his great advice.
 - Wow! I spent 4 weeks on rewriting and cleaning up!! I hope I did a good work :)
 - 4-Aug-96
 - put audio subtask back in, works fine now
 - again found some bugs that could lead to crashes :(
 - V1.5:
 - 23-Aug-96
 - finally got my CyberStrom MK2 with an XC68060/50 :))))
 - GREAT speedup for the whole system :)
 - 16-Sep-96
 - started to support AGA :), but it's more difficult than I thought. But the worst thing is: although I now own an XC68060/50 displaying AVIs on AGA is sloooooooooooooow :(
 - 18-Sep-96
 - added option
-

- AGA
- This forces use of color reduction routines used ↔
for AGA
- chipset
- support for 8 bit AVIs on AGA is almost finished
 - SetPatch 43.4 is needed for correct display, without it the display will become screwed up due to bugs in graphics.library
- 22-Sep-96
- finished support for AGA :)
 - now it should be possible to show all supported encodings on AGA machines
 - CyberAVI now doesn't depend on audio.device anymore, so it should also run on Amiga's without audio hardware (e.g. DraCo)
- 23-Sep-96
- mouse pointer is now invisible during playback
 - functions keys can now be used to adjust playback speed
 - several bug fixes
- 25-Sep-96
- completely rewrote synchronization part. Skipping of frames should be better now.
- 26-Sep-96
- added
STATS
option
- 27-Sep-96
- rewrote synchronization part again :)
 - now using EClock's instead of TimeVal's, thus timing is much more exact. Now skipping of delayed frames works much better, too. Pooohhhh :)
- 29-Sep-96
- removed audio subtask again :)
 - I had some spare time and worked on audio support and I think it now works really good. Because audio data are very small and simple there is no need for an asynchronous audio decoder anymore.
 - when playing animations with palette changes in loop mode the original palette was not restored. This fixed now.
 - added support for PCM 16 bit mono samples
 - fixed a bad bug with PCM 8 bit stereo samples. These were played at half speed before.
- 30-Sep-96
- all truecolor decoders have been splitted in a CyberGraphX part and an AGA part. This may improve speed a bit.
 - a colormap is allocated if needed only

1.12 bugs

Known bugs:

- Memory usage increases when playing more than one animation at a time. To avoid this just start CyberAVI with only one animation at a time.

If you should find any additional bugs or if you have any suggestions please contact me

immediately.

I hope there are no Enforcer or Mungwall hits in CyberAVI. Unfortunately I have no chance to test this myself (why did C= use an MC68EC030 without MMU instead of an MC68030 with MMU??).

If you should find some hits, please report them to
me
.

Please include a capture of CyberAVI started with the DEBUG option if there are any problems while playback (eg. black screen, immediate stop after start, etc).

1.13 todo

Very urgent things to do (maybe already finished in the next release):

- better sound support (will this ever be finished?)
- support AHI for sound playback. This package offers much easier access to different types of audio hardware.
- add option to save single frames as IFF-ILBM pictures

To do:

- support for more video and audio encodings
- use CyberGraphX's ability to use locked bitmaps and write directly to them (does anybody know how this exactly works?)
- maybe an option for playback in a window on WB
- support the Toccata audio board. I already have the developer files, but since audio support still isn't perfect there is no way to support this board. Thanks to Seuma McNally for the developer files.
- write a suitable Installer script, because CyberAVI's requirements for external stuff grows

1.14 xanim

The AVI encodings supported by CyberAVI are based on the source code to Mark Podlipec's XAnim program. XAnim supports a number of other AVI video encodings, as well as QuickTime files.

The key differences between CyberAVI and XAnim for AVI files are:

- XAnim is more powerful and more general than CyberAVI.
- CyberAVI requires either a CyberGraphX compatible graphic board or AGA chipset. ECS is not and will not be supported!

A gzip compressed archive of Mark Podlipec's XAnim can be obtained from:

http://www.portal.com/~podlipec/home.html "The XAnim Home Page"

```

/*
 * xanim.c
 *
 * Copyright (C) 1990,1991,1992,1993,1994,1995,1996 by Mark Podlipec.
 * All rights reserved.
 *
 * This software may be freely copied, modified and redistributed without
 * fee for non-commercial purposes provided that this copyright notice is
 * preserved intact on all copies and modified copies.
 *
 * There is no warranty or other guarantee of fitness of this software.
 * It is provided solely "as is". The author(s) disclaim(s) all
 * responsibility and liability with respect to this software's usage
 * or its effect upon hardware or computer systems.
 */

```

1.15 distribution

CyberAVI is Copyright ©1996 by Thore Böckelmann.

CyberAVI may be freely distributed as long as the following conditions are met:

- all files have to be kept together
- no file may be modified or crunched/packed
- the only official way to distribute this program as archive is the original LhA archive

1.16 credits

CyberAVI was written by Thore Böckelmann using Amiga Oberon 3.10 ↔
and GCC 2.7.0

Thanks to Joachim Greve for his CD-ROMs with CRAM and RGB animations.

Thanks to Stefan Nobis for his CD-ROM with Ultimotion animations.

Thanks to Thomas Wenzel for his RGB and RLE animations, and especially for his examples how to program the audio.device.

Thanks to all the other people who send me some animations for debugging, testing and enhancing CyberAVI.

The

XAnim

program is written by Mark Podlipec. XAnim6 on the Amiga is a ↔
port by

Terje Pedersen. XAnim is ©1990-1996 by Mark Podlipec.

asyncio.library was written by Martin Taillefer, Magnus Holmgren and Olaf Barthel

SetPatch 43.4 was written by Heinz Wrobel

The following copyright applies to all Ultimotion segments of the code:
"Copyright International Business Machines Corporation 1994, All rights reserved. This product uses Ultimotion(tm) IBM video technology."

1.17 disclaimer

No warranty, either express or implied, is made with respect to the fitness or merchantability of CyberAVI.

Thore Böckelmann (referred to as "the author"), reserves the right to not develop any future versions of CyberAVI.

The author will try to make a good faith attempt at correcting any problems if any are discovered, but is in no way required, nor bound to correct them.

The author neither assumes nor accepts any responsibility for the use or misuse of these programs. He will also not be held liable for damages or any compensation beyond the original registration fee due to loss of profit or any other damages arising out of the use, or inability to use this program.

The author will not be liable for any damage arising from the failure of this program to perform as described, or any destruction of other programs or data residing on a system attempting to run the programs.

The user of this program uses it at his or her own risk.
