

**MerlinMPEG**

<b>COLLABORATORS</b>
----------------------

	<i>TITLE :</i> MerlinMPEG		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
WRITTEN BY		December 6, 2024	

<b>REVISION HISTORY</b>
-------------------------

NUMBER	DATE	DESCRIPTION	NAME

# Contents

<b>1</b>	<b>MerlinMPEG</b>	<b>1</b>
1.1	MerlinMPEG . . . . .	1
1.2	introduction . . . . .	1
1.3	requirements . . . . .	1
1.4	cliusage . . . . .	2
1.5	wbusage . . . . .	2
1.6	packedopt . . . . .	3
1.7	targaopt . . . . .	3
1.8	xgaopt . . . . .	3
1.9	rgbopt . . . . .	3
1.10	pipopt . . . . .	4
1.11	grayopt . . . . .	4
1.12	nopframesopt . . . . .	4
1.13	nobframesopt . . . . .	4
1.14	lumrangeopt . . . . .	4
1.15	crrangeopt . . . . .	5
1.16	cbrangeopt . . . . .	5
1.17	hrgrenderopt . . . . .	5
1.18	loopopt . . . . .	5
1.19	quietopt . . . . .	6
1.20	nodisplayopt . . . . .	6
1.21	diropt . . . . .	6
1.22	examples . . . . .	6
1.23	notes . . . . .	7
1.24	bugs . . . . .	7
1.25	authors . . . . .	7
1.26	copyright . . . . .	8
1.27	history . . . . .	9
1.28	acknowledgements . . . . .	10

---

## Chapter 1

# MerlinMPEG

### 1.1 MerlinMPEG

MPEG Video Software Decoder  
for the Merlin Graphic Accelerator

(Version 2.3, 27 October 1994)

---

Introduction  
Requirements  
Copyright  
CLI Usage  
WorkBench Usage  
Examples  
Notes  
Known bugs  
Authors  
History  
Acknowledgements

---

Copyright (C) 1994 Volker Rodehorst

### 1.2 introduction

#### I N T R O D U C T I O N

---

MerlinMPEG decodes and displays MPEG-1 encoded bitstreams on Amigas with the Merlin graphics board. The player will create a new screen or Picture-In-Picture (PIP) window, display the bitstream, and exit.

---

### 1.3 requirements

---

---

## REQUIREMENTS

---

- o AmigaOS 2.04 or higher,
  - o Merlin Graphic Accelerator with HRG System Version 38,
  - o MC68020 CPU or higher.
- 

## 1.4 cliusage

---

### CLI USAGE

---

#### FORMAT

```
MerlinMPEG File PackedDisplay TargaDisplay
XgaDisplay RgbDisplay Gray PipWindow NoDisplay
NoBframes NoPframes LumRange <n> CrRange <n>
CbRange <n> HrgRender Loop Quiet
```

#### TEMPLATE

```
File/A,PD=PackedDisplay/S,TD=TargaDisplay/S,XD=XgaDisplay/S,
RD=RgbDisplay/S,G=Gray/S,ND=NoDisplay/S,PW=PipWindow/S,
NB=NoBframes/S,NP=NoPframes/S,LU=LumRange/K/N,CR=CrRange/K/N,
CB=CbRange/K/N,HR=HrgRender/S,L=Loop/S,Q=Quiet/S
```

#### Examples

---

## 1.5 wbusage

---

### WORKBENCH USAGE

---

Double-clicking on the MerlinMPEG icon will bring up a requester asking for the MPEG-1 stream. The options are read from the icon's tool types.

The following TOOLTYPES are available:

- o PACKEDDISPLAY , TARGADISPLAY , XGADISPLAY ,  
RGBDISPLAY or GRAY
  - o PIPWINDOW
  - o NOPFRAMES
  - o NOBFRAMES
  - o LUMRANGE=<n>
  - o CRRANGE=<n>
  - o CBRANGE=<n>
  - o HRGRENDER
  - o LOOP
-

- o DIRECTORY=<s>
- 

## 1.6 packedopt

P A C K E D D I S P L A Y

---

- o Display Mode : 8 bit Color Screen
  - o Number of Colors : 240 (2 \* 8 reserved)
  - o Dither Mode : Fast Ordered Dither
- 

## 1.7 targaopt

T A R G A D I S P L A Y

---

- o Display Mode : 15 bit HiColor Screen
  - o Number of Colors : 32.768
  - o Dither Mode : None
- 

## 1.8 xgaopt

X G A D I S P L A Y

---

- o Display Mode : 16 bit HiColor Screen
  - o Number of Colors : 65.536
  - o Dither Mode : None
- 

## 1.9 rgbopt

R G B D I S P L A Y

---

- o Display Mode : 24 bit TrueColor Screen
  - o Number of Colors : 16.777.216
  - o Dither Mode : None
-

## 1.10 pipopt

P I P W I N D O W

---

- o Display Mode : 8 bit PIP Window on Merlin Screen
  - o Number of Colors : 240 (2 \* 8 reserved)
  - o See Also : GRAY
- 

## 1.11 grayopt

G R A Y

---

- o Display Mode : 8 bit Grayscale Screen or PIP Window
  - o Number of Colors : 240 (2 \* 8 reserved)
  - o Dither Mode : None
  - o See Also : PIPWINDOW
- 

## 1.12 nopframesopt

N O P F R A M E S

---

- o Function : Causes the player to ignore and not display any P frames.
  - o See Also : NOBFRAME
- 

## 1.13 nobframesopt

N O B F R A M E S

---

- o Function : Causes the player to ignore and not display any B frames.
  - o See Also : NOPFRAME
- 

## 1.14 lumrangeopt

L U M R A N G E = < n >

---

- o Function : Sets the number of colors assigned to the
-

luminance component when dithering the image.  
The product of LumRange, CrRange and CbRange  
should be less than 241.

- o Legal Values : 2 ... 240
  - o See Also : CRRANGE , CBRANGE
- 

## 1.15 crrangeopt

C R R A N G E = < n >

---

- o Function : Sets the number of colors assigned to the red component of the chrominance range when dithering the image.
  - o Legal Values : 1 ... 120
  - o See Also : LUMRANGE , CBRANGE
- 

## 1.16 cbrangeopt

C B R A N G E = < n >

---

- o Function : Sets the number of colors assigned to the blue component of the chrominance range.
  - o Legal Values : 1 ... 120
  - o See Also : LUMRANGE , CRRANGE
- 

## 1.17 hrgrenderopt

H R G R E N D E R

---

- o Function : Use HRGRender.library syscalls when drawing the image.
- 

## 1.18 loopopt

L O O P

---

- o Function : Makes the player loop back to the beginning after reaching the end.
-



## 1.19 quietopt

Q U I E T

---

- o Function : Supresses printing of timing information, and most error messages.
- 

## 1.20 nodisplayopt

N O D I S P L A Y :

---

- o Function : The player does not dither and display, usually used for testing and timing purposes.
- 

## 1.21 diropt

D I R E C T O R Y = < s > :

---

- o Function : The string <s> defines the default directory for the MPEG animation files.
  - o Legal Values : A valid amiga device or directory name.
- 

## 1.22 examples

E X A M P L E S

---

1> MerlinMPEG XgaDisplay canyon.mpg

Show the MPEG animation "canyon.mpg" on a HiColor Merlin screen.

1> MerlinMPEG g pw debbieharry.mpg

Open a PIP and show "debbieharry.mpg" in a grayscale window.

Some Speed examples on my Amiga 2000 with GForce040/33MHz, KickStart 40.63 and WorkBench 40.42 :

MPEG Animation	Size in   pixels	Avg. Frames / Sec					
		low	high	true	gray	pip	graypip
canyon.mpg	144*112	20.0	18.9	17.8	34.8	20.2	27.7

---

---

pirates.mpg	160*120	11.5	11.6	11.1	19.2	11.6	15.1
debbieharry.mpg	160*128	10.5	10.8	10.3	18.4	10.6	14.0
tennis.mpg	352*240	3.6	3.4	3.2	6.0	3.6	4.9

---

## 1.23 notes

### N O T E S

---

The player expects MPEG-1 video streams only. It can not handle multiplexed MPEG streams or video+audio streams. The player uses the paris entropy coding table set (which we believe to be the MPEG-1 standard), but can not handle any bitstreams that use the "berlin" entropy coding table set. Berlin data is relatively rare so there shouldn't be too much to worry about here, but be aware of the difference when looking for streams to play.

Some streams do not end with the proper sequence end code and will probably generate an "Improper sequence end code." error when done playing.

This player can play XING data files. Be aware that XING makes no use of temporal redundancy or motion vector information. In other words, they do not use any P or B frames in their streams. Instead, XING data is simply a sequence of I frames. Since I frames take significantly longer to decode, performance of the player using XING data is not representative of the player's ability.

---

## 1.24 bugs

### K N O W N B U G S

---

- o hrAllocSecondView() produces an Enforcer Hit with HRGSystem.library < 39.21.
  - o PIP works incorrect on scrollable screen.
- 

## 1.25 authors

### A U T H O R S

---

The main work is done at the University of California, Berkeley, by :

---

- o Ketan Patel (kpatel@cs.berkeley.edu),
- o Brian Smith (bsmith@cs.berkeley.edu),
- o Henry Chi-To Ma (cma@cs.berkeley.edu) and
- o Kim Man Liu (kliu@cs.berkeley.edu).

The MPEG player aMiPEG for the Commodore Amiga is written by :

- o Michael Rausch (linux@uni-koblenz.de)

It is based upon the Berkeley X-Windows player version 2.0, with major changes in speed and size.

This distribution for the Merlin Graphic Accelerator is done by :

- o Volker Rodehorst (vr@cs.tu-berlin.de)

If you have something that you would like to see implemented in MerlinMPEG or if you find a bug, feel free to mail me. Please contact me if you have any comments or suggestions.

---

## 1.26 copyright

### C O P Y R I G H T

---

The main work is based upon mpeg\_play 2.0, which is

Copyright (c) 1992 The Regents of the University of California.  
All rights reserved.

Permission to use, copy, modify, and distribute this software and its documentation for any purpose, without fee, and without written agreement is hereby granted, provided that the above copyright notice and the following two paragraphs appear in all copies of this software.

IN NO EVENT SHALL THE UNIVERSITY OF CALIFORNIA BE LIABLE TO ANY PARTY FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS SOFTWARE AND ITS DOCUMENTATION, EVEN IF THE UNIVERSITY OF CALIFORNIA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

THE UNIVERSITY OF CALIFORNIA SPECIFICALLY DISCLAIMS ANY WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE SOFTWARE PROVIDED HEREUNDER IS ON AN "AS IS" BASIS, AND THE UNIVERSITY OF CALIFORNIA HAS NO OBLIGATION TO PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR MODIFICATIONS.

The idct algorithm is loosely based upon jrevdct.c, which is

Copyright (C) 1991, 1992, Thomas G. Lane. This file is part of the Independent JPEG Group's software. For conditions of dis-

---

tribution and use, see the accompanying README file.

This implementation is based on an algorithm described in C.

Loeffler, A. Ligtenberg and G. Moschytz, "Practical Fast 1-D DCT Algorithms with 11 Multiplications", Proc. Int'l. Conf. on Acoustics, Speech, and Signal Processing '89 (ICASSP '89), pp. 988-991.

The MPEG video stream player aMiPEG for the Commodore Amiga is Copyright (C) 1994 Michael Rausch.

---

## 1.27 history

### H I S T O R Y

---

MerlinMPEG v2.3 (27.10.94)

New features:

-----

- o Add program icon and WorkBench support.
- o Add filerequester and menu for PIP Window handling.
- o Save configuration for window position and size in ENV:  
(For permanent use, copy ENV:MerlinMPEG.prefs to ENVARC:)
- o Use MPEG filename as window title.

Fixed problems:

-----

- o Probs with more than one player fixed.

MerlinMPEG v2.2b (28.09.94)

New features:

-----

- o Use asynchronous IO to speedup playing from slow devices.  
(CTRL-C now only aborts, when printing a message !)
- o Close HRScreen with right mouse button.

MerlinMPEG v2.2 (24.09.94)

New features:

-----

- o Add TARGA 15bit mode for Domino users.
- o Amiga style CLI parsing with RDArgs().
- o Drawing with HRGRender.library is selectable.

Fixed problems:

-----

- o Thanks Hans Raaf for reporting warning from WShell.

MerlinMPEG v2.1e (12.09.94)

New features:

-----

---

- o Add sliders and arrow buttons to the resizable PIP window.

Fixed problems:

-----

- o Thanks Michael Kilimann for reporting a bug in the 'next\_start\_code()' routine, now fixed...
- o Remove Enforcer Hits at the end of improper sequences.

MerlinMPEG v2.1d (31.08.94)

New features:

-----

- o Speed improvements on high color (15%), true color (45%) and gray / gray PIP (10%) display by replacing library calls and write direct into card memory.
- o Center anim frames on screen.
- o Add luminance and chrominance range for 8bit color display.

Fixed problems:

-----

- o Fixed last picture on gray PIP display.
- o Real time now starts after display initialization.
- o Only valid modes are displayed in the Screenmode requester.

MerlinMPEG v2.1c (15.08.94)

New features:

-----

- o Speed improvements on gray display (30%) and gray PIP (10%).
- o Faster 'ordered2' dithering for 8bit color (20%).
- o Add manual and AmigaGuide documentation.

Fixed problems:

-----

- o More than one PIP is now restricted.

MerlinMPEG v2.1b (11.08.94)

New features:

-----

- o Center PIP window on screen.

Fixed problems:

-----

- o Now use correct screen for PIP window.
- o Minimum screen size (640x400) for PIP added.

MerlinMPEG v2.1 (05.08.94)

- o First public release.

---

## 1.28 acknowledgements

---

## A C K N O W L E D G E M E N T S

---

Many thanks to:

- o M. Balzer,
- o B. Brandes,
- o U. Flegel,
- o M. Jantz,
- o M. Kilimann,
- o D. Mehren,
- o H. Raaf,
- o M. Rausch...

and everyone who has helped...

---