Gerald's Column
by Gerald Fitton

This month I am going to follow up a few points from my correspondence.

Creating Video DVDs

Only one person has written to me saying that they are interested in using their next computer to produce video DVDs. We exchanged about a dozen emails on the subject and I think I can fairly summarise them by saying that he considers that a computer (by which he means a RISC OS computer) is not the best tool for creating a movie masterpiece. He takes movies with a digital camcorder, quite a good one, and then uses a suite of hrdware editing equipment to generate an S-VHS tape of his 'masterpiece'. Only as the last step is the S-VHS tape converted to DVD format for either storage or distribution.

Whilst everyone has their own opinions about how best to do any job we agreed to disagree about the best way of producing a video using as our starting point a massive number of 'clips' on a digital camcorder.

My preference is to copy the whole of the camcorder tape to my computer hard drive and then use the computer to put together an edited sequence. At this stage the edited sequence is not a .avi file but merely a list of edit (in and out) points. The original disorganised file of clips (copied verbatim from the camcorder) remains the only copy of the clips in .avi format. When the file containing the list of edit points is executed it looks for and finds the right place in the original file and plays the clips (or parts of clips) in the sequence dictated by the list of edit points. The final step is to copy to a DVD the clips (or parts of clips) in the MPEG 2 format used for a DVD, in the sequence dictated by the list of edit points.

The software I use does allow me to create a .avi format file on the hard drive rather than burn it to a DVD. If I do this then the .avi file on the hard drive is a stand alone movie which plays my 'masterpiece'.

The .avi Format

Another correspondent suggested to me that an analogue TV picture does not correspond to a digital picture having 696 * 532 * 3 Bytes because the colour information on a TV picture does not have the colour fidelity which corresponds to 24 bit (3 Byte) colour. Whilst this is true my investigations indicate that a ,avi file held on a computer does hold each frame in 3 Byte colour. My evidence for this is that I can extract a single frame taken with my digital camcorder and look at the way it is made up. My software reports that the single frame (and hence each single frame) is held in 3 Byte colour.

Certainly running the .avi file on the computer is a much better picture than anything I have ever seen on any TV screen.

MPEG 3 and MPEG 4 Format

Although only one correspondent has written to me about Video DVDs it is early days yet and more may be on their way to me!

The most popular subject of the month is MPEG 3 and MPEG 4 followed closely by MIDI.

MPEG 3

MPEG 3 is a very popular format for musical sound files. I think that the first substantial use for this format was the Sony Mini Disc machine. This Sony Mini Disc machine is a box much smaller than their earlier Sony Walkman (used for playing audio cassette tapes), but it does very much the same thing.

The Mini Disc of the Sony machine is rather like a small floppy disc. These mini discs are interchangeable. You can connect a CD player to the Sony Mini Disc machine and, whilst playing the CD at standard speed, the data is compressed to MP3 format and stored on the removable disc. You can add captions such as the title of the song and the singer etc so that, whilst the Mini Disc is being replayed, the captions are displayed.

MPEG 4

I have discovered that software which converts .wav or .cda format files to MP3 format generally costs extra money whereas the software which converts music files from .wav or .cda to MP4 tends to be more freely available.


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:: You may choose a quality preset ::
:: You may choose a quality preset ::
CBR/Stereo - 32 Kb/s [HE AAC]
CBR/Stereo - 48 Kb/s [HE AAC]
CBR/Stereo - 64 Kb/s [HE AAC]
CBR/Stereo - 80 Kb/s [HE AAC]
CBR/Stereo - 96 Kb/s [LC AAC]
CBR/Stereo - 128 Kb/s [LC AAC]
CBR/Stereo - 192 Kb/s [LC AAC]
VBR/Stereo - Portable, 30-40 Kb/s [HE AAC]
VBR/Stereo - Portable, 40-50 Kb/s [HE AAC]
VBR/Stereo - Portable, 50-70 Kb/s [HE AAC]
VBR/Stereo - Internet, 90-100 Kb/s [LC AAC]
VBR/Stereo - Streaming, 100-120 Kb/s [LC AAC]
VBR/Stereo - Transparent, 110-150 Kb/s [LC AAC]
VBR/Stereo - Extreme, 140-190 Kb/s [LC AAC]
VBR/Stereo - Audiophile, 160-250 Kb/s [LC AAC]
VBR/Stereo - For Transcoding, 250-300 Kb/s [LC AA
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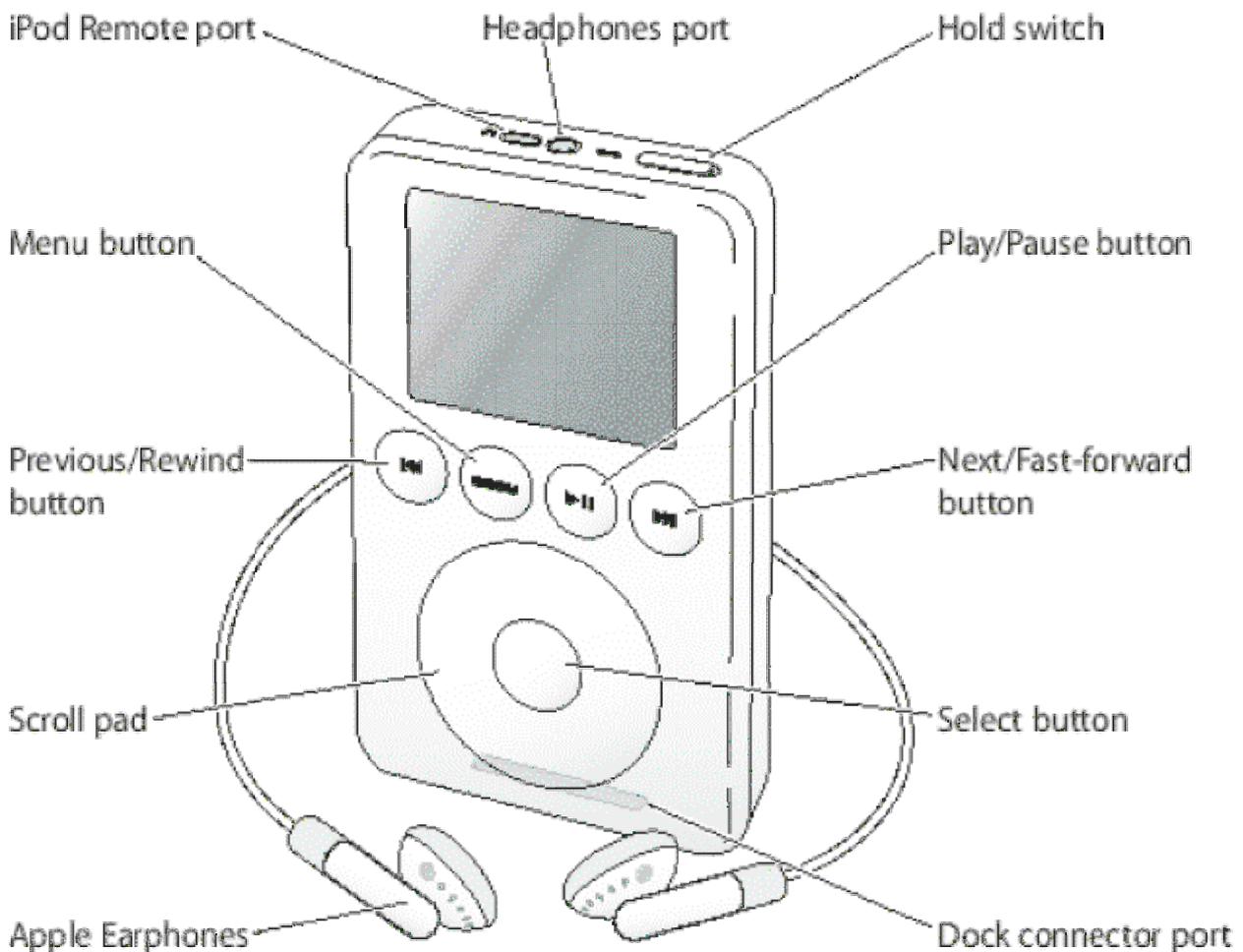
Recently I have had an opportunity to become more familiar with the MP4 format. You will recall that this is not just one single format but a range of formats. In the table below you will see the acronym AAC (which stands for Advanced Audio Encoding). You will recall that HE (High Efficiency) provides greater compression but a poorer quality than does LC (Low Complexity). CBR is Constant Bit Rate and VBR is Variable Bit Rate.

It is my opinion that MP4 will replace MP3 as the format of choice for compressed music files not only because it is being made more freely available but because (to my ears) it sounds considerably better even with files compressed to the same size.

iPOD

My recently increased familiarity with MP4 is because a friend of mine has bought an iPOD machine. For those of you unfamiliar with this particular piece of kit I have included a picture taken from the Apple website. iPOD is about the size of a credit card.

iPod Remote port — Headphones port — Hold switch

Menu button — Play/Pause button

Previous/Rewind button — Next/Fast-forward button

Scroll pad — Select button

Apple Earphones — Dock connector port

 The 'Headphone Port' at the top is for either earphones or for a speaker system such as that which you might have connected to your computer. I did try a pair of speakers without an amplifier and the sound was loud enough for me and I am going slightly deaf.

With an amplifier (most computer speaker systems have amplifiers) the volume control on the iPOD has to be turned well down. The better the speakers or headphones the better the quality of the sound. It is very difficult to discern the difference between the sound from the iPOD and that from the original CD.

So what's inside the box? Inside the box there is a 20GB (yes twenty gigabyte) hard drive on which all the music is stored.

I recall what a joy it was when the LP (Long Play) record came out and I could play a whole symphony without having to change the disc. Previously people used something called an autochanger. This autochanger device contained a stack of half a dozen vinyl 78 rpm records each of which played for only a few minutes!

When the stack ran out, as it did every 15 minutes or so, a new stack had to be loaded!

Using the iPOD default AAC MPEG 4 format (.m4a) I found that the data rate was about 1 MB per minute of music. I calculate that 20 GB is worth about 20 000 minutes of music. In more understandable units that is a couple of weeks worth of non stop (14/7) music!

The 'downside' of the iPOD when compared with the Sony Mini Disc is that it does need a computer to do the file conversions. You can not plug a CD player directly into the iPOD in the way that you can with (some) Sony Mini Disc machines.

As a by-the-way before I get too much correspondence on the subject, the iPOD will play .wav and .mp3 formats as well as the MPEG 4 formats .m4a, m4b and m4p. It does not support MPEG 1 nor MPEG 2 audio files.

MIDI Files

One correspondent has written to me saying that, with his equipment, MIDI files sound rather lifeless when compared with "the real thing". Certainly not all MIDI players render a MIDI file in the same way. One of the features missing from some MIDI software is Chorus. This MIDI effect converts the sound from a single instrument so that it sounds as though the music is being played by a group of similar instruments.

When the violinists in the string section of an orchestra play what is supposed to be the same note they don't all play the same note. It is the merging of all these 'close together' notes which produces the unique sound of a string section and makes it sound completely different from a solo violin.

Certainly without the Chorus effect a pop song will sound lifeless.

Reverb (short for Reverberation) is another MIDI effect which is missing from some MIDI rendering software. Reverb is a useful effect if it used with a very delicate touch. It adds a random series of echoes to the original waveform and, used correctly, can modify a MIDI sound in such a way that it sounds as if it is playing in a real room (a concert hall or auditorium) rather than in an anechoic studio. When a music CD is created the music is recorded in an anechoic (no echoes) room and the reverb is added by the sound engineer.

In order for MIDI files to be rendered in a way which reproduces this effect Reverb is added. If the rendering software does not support Reverb then the sound will be lifeless.

Summary

A possible use for your next computer is creating DVDs from your home movies. It is my opinion that editing a miscellany of digital video clips is best performed using the versatility of a computer rather than using dedicated hardware.

Another possible use is to convert audio formats from, say, the .cda format of an audio CD to MPEG 3 or MPEG 4 format for use on devices such as the Apple iPOD.

Although in one of my earlier articles I did concentrate on the manipulation of MIDI format files it is possible to use a computer to do many interesting things with .wav audio files as well. I shall return to the subject of modifying (digital) .wav (rather than MIDI) music files in another article. For now let me say that you may want to use your next computer for all these things. Or you may not!

Communication

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