GET ON THE PITCH

Opened Session in 0.51 seconds

datafile ►

► KIT USED

Adobe Audition
Creative AudigyEX soundcard
Fender Stratocaster
Roland VG-8
Yamaha RGX bass guitar
Roland V-Bass

► ON THE CD

• Adobe Audition (demo)
• Bass (changed).mp3
• Bass (unchanged).mp3
• Bass (silly).mp3
• Pitch1.mp3
• Pitch2.mp3
• Pitch3.mp3
• Tune.mp3

► ON THE NET

Audition
www.adobe.co.uk
AudigyEX
www.soundblaster.com
VG-8 & V-Bass
www.roland.co.uk

Have you ever recorded something and wished that you could change the key, or just perhaps add that little something extra to the overall sound? Well, this is where the process of pitch shifting comes in very useful.

Before computer music became so popular, to pitch shift you would need a piece of hardware to adjust the speed of the recorded signal. Such hardware effects units are most commonly found in the world of guitar and are closely related to modulation effects such as chorus.

But now the home computer enables you to adjust the pitch of the individual components in your songs and gives you *carte blanche* to do just about anything you want. Pitch effects in computing are just a step away from time stretching. When you speed up a sample using time stretching, it's pitch and tempo changes. If you repeat the process, but preserve the tempo, you have pitch shifting.

So what are the practical applications of pitch shifting? You can use pitch shifters to change an instrument into a new key. Or to create new sounds, to thicken up an instrument and enhance the mix.

Creative pitch-shifting

If you think pitch has more to do with football than music, get ready for a quick lesson. Your referee is Darren Lock

The software you need

Try these techniques no matter which flavour of audio editor you prefer

In these tutorials, we'll use Adobe Audition, a demo of which is on the cover disc. You can, however, use a variety of audio-editing packages to achieve the same ends, including Steinberg's WaveLab and Sony's Sound Forge. See the head to head on p112 to see what they're made of.
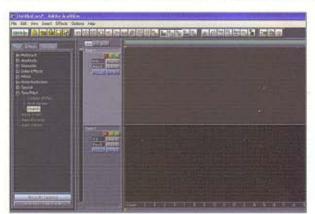
In our tutorial, meanwhile, the first example is how you can create double-tracked harmony lines without the hassle of repeatedly playing those parts in different keys. We'll also show you how to play with the human voice, so you can transform yourself into either Barry White or Kylie Minogue. And if you're stuck for instruments, we'll show you how to use pitch shifting to create a whole scale with just one instrument sample. Very useful if you're aiming to create a multi-sampled bank of sounds destined for a software sampler – see p18 for more on these virtual instruments.

Double-tracking made easy

Forget manual double-tracking. Pitch shifting can be used to replicate the effect quickly and easily

1 THE THEORY

In our first example, we're going to create a short, double-tracked guitar motif that has the main guitar panned to the left and its pitched-shifted-by-a-fifth doppelganger panned to the right to add depth and harmony. Pitch shifting enables you to do this easily and quickly.

2 GUITAR SESSIONS

With Adobe Audition fired up, we click File then New Session to start a new recording session. Checking the record tab on Track 1 of our multi-track recording, we get ready to record our little guitar motif. With everything in place, we hit the record button and begin to play.

3 THE PERFECT TAKE

Pleased with our guitar noodling, we're going to transform this into a double-tracked piece. To do this, we need to make a copy of the first track and dump it onto a spare track for processing. By pressing Edit then Convert to a Unique Copy, we have created a cloned file.

4 DOUBLE TAKE

With our cloned file in our browser, we can drag it across to a spare track on our screen. Click on the cloned track, hold the mouse button down and drag it onto a spare channel. Use the right mouse button to adjust the temporal position of the sample so it is aligned with the first track.

In perfect harmony

How to create harmony lines using pitch shifting

1 DOWN THE PAN

We can begin to adjust the panning for the tracks so that the original is panned 50 per cent to the left and the pitch-shifted version is panned 50 per cent to the right. To access the pan control, right-click the pan button on each channel's controls. Use the slider to adjust the pan setting.

2 SHIFTING THE PITCH

With the cloned track in place, we are ready to shift the pitch. To do this, use the FX send to process the file (so it is non-destructive and the original file is preserved). From the Effects list to the left of the multi-track display, choose Time/Pitch then Stretch.

3 JUST A FIFTH

With the Stretch effect activated, we can double-click on the second track's blue FX button to open up the Stretch FX control panel. Here we can select Constant Stretch from the controls and use the drop-down Transpose menu to select how many tones by which we want to raise the track.

PRIMER
USING THE FX PANEL

Adobe Audition enables you to tweak the quality of the pitch-shifting effect you have applied to the track. The Precision setting offers the facility to degrade the quality of the final effect if you set it to Low or Medium precision. This is great for scuzzing up samples. However, if you want crystal clear pitch-shifting, set the precision to High.
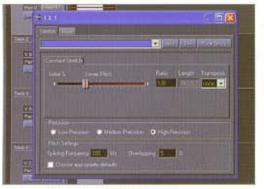
His masterful voice

In this section, we're going to show you how to use pitch-shifting with the human voice

1 THE GOLDEN THROAT

If you aren't a very good singer or just want to experiment, pitch-shifting allows you to transform your singing voice from deep bass to soprano. We are trying to create the next Barry White by taking a regular short vocal performance and dropping the pitch.

2 IN THE BEGINNING

In Adobe Audition, create a new session by clicking File, New Session and check the red recording button on the first track in the multi-track. With the microphone connected and your vocal chords warmed up, record a line with some reverb to sweeten it up.

3 ADDING FX

With a performance recorded, click Effect to the left of the multi-track display then on Time/Stretch. Assign the Stretch effect the FX buss by double-clicking. Adjust the amount of pitch effect double-clicking the blue FX button on the selected channel.

4 ADJUSTING THE PITCH

With the Stretch effect assigned, double-click the blue FX button to access the Stretch effect panel. The human voice only needs small adjustments in pitch before it begins to sound a little less human, so drop the pitch by 30 per cent.
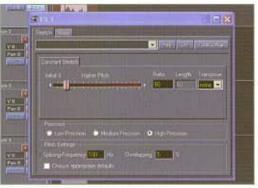

5 RAISING THE PROFILE

You can use the same effect to raise the pitch of the voice to make it sound like something from Alvin and the Chipmunks. If you were changing the pitch to match the key of a song, you'd use the Transpose function rather than the pitch slider.

6 VOICES IN HARMONY

In our next example, we are using Adobe Audition to cr[e] a three-part vocal harmony using just one recorded vocal line. Cr[e] a new session and record a brief vocal line on the first channel. Duplicate the track and paste it onto two subsequent channels

7 SEND IN THE CLONES

With the two copied vocal lines in place, assign the Stretch to the FX channel of tracks two and three. Now adjust each effect. Drop the vocal line on track two by two semi-tones and drop the vocal line on track three by one semi-tone.

8 ADJUSTING THE FIELD

The three voices are laid on top of each other and don't really add anything. To compensate, pan track two 70 per cent to the right of the stereo field and pan track three 70 per cent to the left. The mix now sounds as if three voices are singing in unison.

9 THE FINAL TOUCH

Our voices still sound like they've come from the same s[]
lungs, so to add a random element adjust the start time of the v[o]
on track two and three so that they start a few micro-seconds a[]
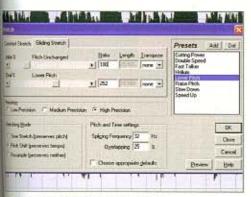our initial voice. Now our group sounds like three different voic[es]

More pitch effects

We've played with voices and harmonies, so now let's do the really freaky stuff

1 GLIDING STRETCH

In the following example, we are going to record a bass line and then use the gliding stretch effect to drop the pitch until it is a growling sub-woofer rattling mass of bass. In Adobe Audition, we've created a new session and recorded our bass part.

2 CLOSE TO THE EDIT

To create a gliding stretch pitch effect, we need to switch to edit mode. To do this, click on the Edit View button at the top left of the editing screen (or press F12). In editing mode, we edited the extraneous material from the bass line, ready for its effects process.

3 DOING THE STRETCH

By pressing Ctrl+A, we selected the whole length of the bass line to be stretched. Alternatively, you could use the mouse to mark the area of the loop you want to apply the gliding stretch effect to. Click Effects, Time/Pitch and Stretch for the Stretch menu.

4 APPLYING THE EFFECT

This is a volatile effect so the loop will be changed forever – back up your loops and use a copy if you want to preserve them. With the Stretch screen displayed, click the Gliding Stretch tab and move the slider to the right until it reaches 250 on the scale.
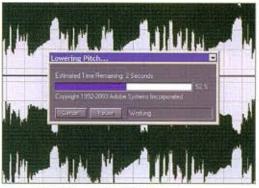

5 BASS IS THE PLACE

With the effect applied, it starts off at its normal key and lowers in pitch. It almost sounds as if the bass strings have become unwound while the player plays. For more precision, use the Transpose list to transpose the pitch change to your loops.
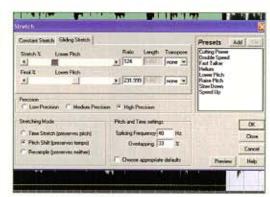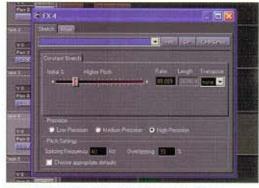

6 BEING SILLY

The fun needn't stop there. Returning to our bass line, we went through the loop and selected the first bar of music, then applied the stretch. We repeated this across the loop, changing the gliding stretch effect so that the bass warbled up and down in pitch.

7 CREATING TUNES

This is the scenario. You've a tiny percussion noise you want to use in a song and you've got far too much time to kill. Why not use Audition's pitch-shifting to make a tune? We loaded a single percussion noise into the multi-track and set about creating a tune.

8 SPECIAL FX

Making music like this is easy to do if you have the patience. Configure the effects buss of each channel with a stretch effect set to one-semitone. Then drag and drop your samples onto the channels and make a little tune. It's a bit pointless, but great fun.

9 AND THAT'S PITCH-SHIFTING

So there you have it for pitch shifting. It can be used to create harmony parts in your songs or just to thicken up the mix. It can also be used to fix bad performances or create wacky effects. In all, a useful effect to have in your sonic armoury and great fun.