Tuesday – Part 5

Petr Kropík

MATLAB – GUI and multimedia – addition

Example:
Creating an AVI file

To export a sequence of MATLAB graphs as an AVI format movie, perform these steps:
Create an AVI file object, using the avifile function.

```
aviobj = avifile('mymovie.avi','fps',5);
```

AVI file objects support properties that let you control various characteristics of the AVI movie, such as colormap, compression, and quality. (See the avifile reference page for a complete list.) avifile uses default values for all properties, unless you specify a value. The example sets the value of the frames per second (fps) property. Capture the sequence of graphs and put them into the AVI file, using the addframe function.

```
for k=1:25
    h = plot(fft(eye(k+16)));
    set(h,'EraseMode','xor');
    axis equal;
    frame = getframe(gca);
    aviobj = addframe(aviobj,frame);
end
```

The example uses a for loop to capture the series of graphs to be included in the movie. You typically use addframe to capture a sequence of graphs for AVI movies. However, because this particular MATLAB animation uses XOR graphics, you must call getframe to capture the graphs and then call addframe to add the captured frame to the movie.

Close the AVI file, using the close function.

```
aviobj = close(aviobj);
```

Complete program:

```
function avi_write
% creating an AVI file

aviobj = avifile('mymovie.avi','fps',5);

for k=1:25
    h = plot(fft(eye(k+16)));
    set(h,'EraseMode','xor');
    axis equal;
    frame = getframe(gca);
    aviobj = addframe(aviobj,frame);
end

aviobj = close(aviobj);
```

Example:
Creating an AVI file 2
- another function

```
function avi_sincos
% creating an AVI file - sincos

aviobj = avifile('sincos_movie.avi','fps',15);

t = 0:0.01:2*pi;

for k=0:1:40
    h = plot(t, sin(k .* t) .* cos(t));
    messg = sprintf('k = %d', k);
    title(messg);
    set(h,'EraseMode','xor');
    axis equal;
    frame = getframe(gca);
    aviobj = addframe(aviobj,frame);
end

aviobj = close(aviobj);
```

Example:
Play an WAV file

Use **wavplay** function.

```
load chirp;            % load .mat file from MATLAB library
y1 = y; Fs1 = Fs;
load gong;
wavplay(y1,Fs1,'sync') % The chirp signal finishes before the
wavplay(y,Fs)          % gong signal begins playing.
```

Audio and video functions – summary

General functions

audioplayer	create audio player object
audiorecorder	perform real-time audio capture
beep	produce beep sound
lin2mu	convert linear audio signal to mu-law
mmfileinfo	information about multimedia file
mu2lin	convert mu-law audio signal to linear
sound	convert vector into sound
soundsc	scale data and play as sound

SPARCstation - specific sound functions

aureadRead	NeXT/SUN (.au) sound file
auwriteWrite	NeXT/SUN (.au) sound file

Microsoft WAVE sound functions

wavplay	play sound on PC-based audio output device
wavread	read Microsoft WAVE (.wav) sound file
wavrecord	record sound using PC-based audio input device
wavwrite	write Microsoft WAVE (.wav) sound file

Audio/Video Interleaved (AVI) Functions

addframe	add frame to AVI file
avifile	create new AVI file
aviinfo	return information about AVI file
aviread	read AVI file
close	close AVI file
movie2avi	create AVI movie from MATLAB movie