Sketchify Tutorial
I/O Services

sketchify.sf.net

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I/O Services

- With Sketchify services, designers can introduce in their sketches real but “trimmed down” functionality of input/output devices and software components from various domains.

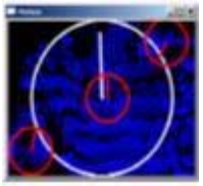
I/O Services

- We have incorporated many different services within AMICO Sketchpad, including text-to-speech engines and speech recognizers, camera-based face and motion detectors, VRPN devices (such as 3D trackers and buttons), MP3 and MIDI players, more specialized devices such as the Wii Remote, Nabaztag, or Phidgets, Web services (such as Google spelling checker and search engine), semantic services (such as the Wordnet definition service), and many others.

Some Examples

- Face Detector Service
  - YouTube Video

- Motion Detector Service
  - YouTube Video



- Older Description of Sketchify Services
  - Link to Web Page

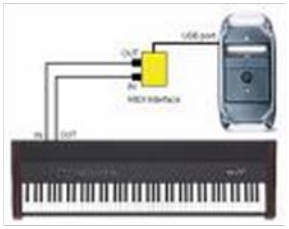
Speech Services

- Sketchify includes several open-source text-to-speech (TTS) engines and speech recognizers, including an English speech recognizer based on Sphinx-4 the FreeTTS English TTS engine, the NEXTENS Dutch TTS engine, and the Mary TTS engine that currently supports English, German and Tibetan.

	Direction*	Variables	Description
FreeTTS text-to-speech engine 	⇦	tts-input	Text to be pronounced.
	⇨	tts-status	Status of the engine: 'loading', 'ready', 'talking'
Sphinix-4 speech recognizer 	⇨	speech-command	Text produced by the recognizer
	⇨	sphinix4-status	Status of the engine: 'loading', 'ready', 'talking'

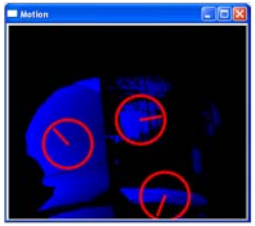
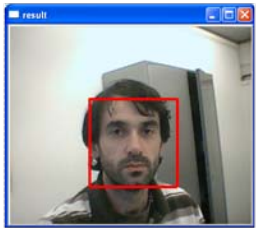
Music Services

- We currently support two music output tools: an MP3 music player, based on the jlGUI open-source Java MP3 player, and a MIDI player, implemented using standard Java audio libraries.

	Direction	Variables	Description
MP3 Player 	⇦	mp3-song	URL or path of audio file to be played
	⇦	mp3-command	Playback commands: 'start', 'stop', 'pause', 'next', 'previous', 'eject'
	⇦	mp3-volume	Sound intensity
	⇦	mp3-equalizer	Main equalizer level
	⇦	mp3-equalizer-<channel>	Equalizer level per channel
MIDI Player 	⇦	midi-note	A note to be played in format "<duration> <velocity> <tone>"
	⇦	midi-instrument	Music instrument being played

Computer Software Services

- We have adapted several computing vision modules, based on the OpenCV Computer Vision Library, including a motion detector and a face detector.

	Direction	Variables	Description
OpenCV motion detector 	⇨	motion-intensity	Intensity of motion derived from the difference between successive images.
OpenCV face detector 	⇨	number-of-faces	Number of faces detected: 0, 1, 2, ...
	⇨	face-<id>-x1	Left
	⇨	face-<id>-y1	Top
	⇨	face-<id>-x2	Right
	⇨	face-<id>-y2	Bottom

Face Expressions

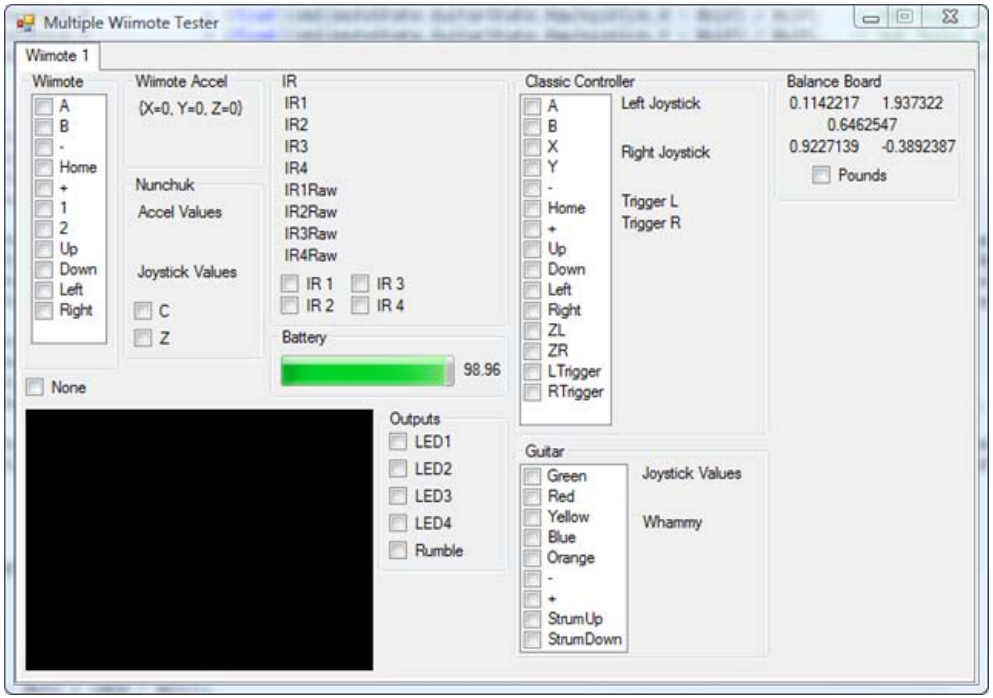
- We also support a simple face expression animation module, based on The Expression Toolkit – an open-source procedural facial animation system. In our adaptation, the face animation runs in a separate window, and through variables a designer can set basic and complex facial expressions, as well as define the “mood” of the character.

	Direction	Variables	Description
Face Expressions 	⇦	face-expression	ID of the face expression to be animated (1..41)
	⇦	face-composite-expression	ID of one of 12 complex face expressions to be animated
	⇦	face-mood	Face mood during animation (‘happy’, ‘sad’, ‘angry’, ‘scared’, ‘tired’, ‘skeptical’)

Wii Remote

- Wii Remote, which connects to a PC using a Bluetooth link, is a complex sensing platform. It can track infra-red sources, and contains three acceleration sensors, various buttons, a vibrator, a simple speaker and some status LED diodes. It can also be used to connect more devices, such as Wii Nunchuk, which contains a joystick and more buttons.

- Other related devices, such as Wii Fit, can also be used. Our Wii software service is based on the C# demo programs that come with WiimoteLib.



Wii Remote

Wii remote

Wii Remote

Wii Nunchuk

Wii Fit

Direction	Variables	Description
⇨	wii-<wii-id>-accel-x	X-axis acceleration (in Gs)
⇨	wii-<wii-id>-accel-y	Y-axis acceleration (in Gs)
⇨	wii-<wii-id>-accel-z	Z-axis acceleration (in Gs)
⇨	wii-<wii-id>-ir-<object-id>-x	X position of a tracked infrared object (0..1.0)
⇨	wii-<wii-id>-ir-<object-id>-y	Y position of a tracked infrared object (0..1.0)
⇨	wii-<wii-id> -<button-id>-state	State of each Wii Remote button ('True' or 'False")
⇦	wii-<wii-id>-led-<led-id>-status	Status of led diodes on Wii ('on' or 'off')
⇦	wii-<wii-id>-vibrate-ms	Causes the Wii Remote to vibrate for a given time (in milliseconds)
⇨	wii-<wii-id>-fit-<led-id>-status	The status of LED diodes on Wii Fit
⇨	wii-<wii-id>-guitar-<led-id>-status	The status of LED diodes on Wii Guitar Device
⇨	wii-fit-balance-<n>	Data from one of four balance board sensors