Assistive Context Aware Toolkit (ACAT)

Developer Instructions

Project website: https://01.org/acat

Introduction

Assistive Context-Aware Toolkit (ACAT) is an open source platform developed at Intel Labs to enable people with motor neuron diseases and other disabilities to have full access to the capabilities and applications of their computers through very constrained interfaces suitable for their condition. More specifically, ACAT enables users to easily communicate with others through keyboard simulation, word prediction and speech synthesis. Users can perform a range of tasks such as editing, managing documents, navigating the Web and accessing emails.

ACAT was originally developed by researchers at Intel Labs for Professor Stephen Hawking, through a very iterative design process over the course of three years. Professor Hawking was instrumental to the design process and was a key contributor to the project design and validation. After Intel deployed the system to Professor Hawking, we turned our attention to the larger community and continued to make ACAT more configurable to support a larger set of users with different conditions.

Our hope is that, by open sourcing this configurable platform, developers will continue to expand on this system by adding new user interfaces, new sensing modalities, word prediction and many other features. ACAT is designed to run on Microsoft Windows* machines and can interface to different sensor inputs such as infrared switches, camera, push buttons, and more.

Predictive text functionality is powered by Presage* (http://presage.sourceforge.net/), an intelligent predictive text engine created by Matteo Vescovi. Integration with Presage is through the Windows Communication Framework.

Requirements
1. Visual Studio 2012
   Note: If you get if you see this message: "The program can't start because MSVCP110.DLL is missing from your computer", please go to the following link and download the missing DLL. http://www.microsoft.com/en-us/download/details.aspx?id=30679#
2. At least 1 GB of free space
3. Presage word prediction software v0.9.1.

Installing Presage

Presage **must** be installed for the software to run.

1. Download the ACAT source and unzip it.
2. The path to the Presage installer in the source tree is
   $\Applications\SetupClean\Install\presage-0.9.1-32bit-setup.exe
3. Run the Presage installer and accept all defaults.
4. Presage will run as a systray application. It is automatically launched on Windows startup.

Alternatively:

1. Download the installer for pre-built binary of ACAT (**ACATSetup.exe)** from
   https://01.org/acat/downloads.
2. Run ACATSetup.exe. This will install the ACAT binaries and Presage as well.

Building the toolkit

1. Open ACAT.sln
2. Set **Applications\ACATApp** as the startup project
3. Do a Rebuild All.
   Note: The very first time you do a Rebuild, you may get errors. Do a Clean and a Rebuild again and it will compile clean.
4. ACAT has dependencies on Microsoft Office 2010 Interop assemblies. If you don't already have this installed, you may download it from http://www.microsoft.com/en-us/download/details.aspx?id=3508 and install it.
5. Even after installing the Interop assemblies, there may be an unresolved reference to Microsoft.Office.Core. You will still be able to build the solution successfully and execute the application. Not sure, but you may need Office 2010 installed to resolve this.

Installing the Presage Database

Before you run the application you built in Visual Studio, you must install the Presage word prediction database. The database file is not bundled with the source as the size is ~178MB. This exceeds the file size limit of the Github source repository.   The database however is bundled with the ACAT application installer. Here are the steps to install ACAT and then get the database file from there.

1. Download the installer for pre-built binary of ACAT (**ACATSetup.exe)** from
   https://01.org/acat/downloads.   Run it to install ACAT. By default, it installs ACAT in
   C:\Intel\ACAT. Let's call this the **INSTALLDIR**.
2. From your Visual Studio, go to the build directory for ACATApp. This will be either
   $\Applications\ACATApp\bin\Debug** or **$\Applications\ACATApp\bin \Release. Let's call this
   the **RUNDIR**
3. Run ACATTryout.exe. This will create the ACAT User folder **RUNDIR**

4. Go to **INSTALLDIR**\Install\Users\ACAT\WordPredictors\Presage. Here INSTALLDIR is the directory where you installed ACAT in step 1.
5. Copy database.db from there into the clipboard. It's around 180 MB.
6. Go to RUNDIR\Users\ACAT\WordPredictors\Presage.   (see Step 2 for RUNDIR. The **Users** folder will get created automatically in Step 3).
7. Paste database.db from the clipboard to this folder.

Running the application

1. Make sure you have installed Presage (see Installing Presage above)
2. Make sure you have installed the Presage database (see above).
3. After building the toolkit, the application will be located under **$\Applications\ACATApp\bin\Release**. The name of the executable is ACATApp.exe
4. Run the app from within Visual Studio or from Explorer.
5. Use the F12 key as the input trigger for the application.