Project IRL.reader
capture. translate. read aloud.

Team Members

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The Concept

- **Project Concept**: This project will allow travelers to take a picture of text in a foreign language and have it read aloud to them in their own language. Our prototype will accept images from a Bluetooth-enabled camera phone (or other camera), perform optical character recognition, translation, and finally text-to-speech conversion.

- **Motivation**: Most translation devices on the market today either require the user to type in the text they wish to translate or are cost prohibitive. Our prototype will enable the user to easily transform text "in real life" into audio they can understand.

Competitive Analysis

- **knfb Reader Classic** ($2,295, http://www.knfbreader.com) – This product is literally a digital camera attached to a PDA with which a blind person can have text read to them. Our solution aims to provide a similar set of features at a much lower price.

- **Franklin Super Pen Translator** ($229, http://www.franklin.com) **–** This pen can read in text via an optical scanner, translate the text, and read the translation aloud. Since our prototype uses a camera, users will not need to touch the text or be limited by the size of the text.

- **Camera Dictionary by MediaSeek** (105 Yen/mo) – This Japanese phone app uses OCR to convert English characters in an image into Japanese characters. Unlike this one, our product will be available in the US.
  Link: http://wirelesswatch.jp/2006/09/04/language-translations-via-camera-phone/

- **MobileAMA Camera Translator** ($?) – This product appears to be a camera attached to a PDA made by HP that can translate text within images, but has no additional information.   Link: http://www.mobileama.com/Cameratranslator.htm

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Competitive Analysis 2

Super Pen Translator

Camera Dictionary

Reader Classic

Camera Translator

Requirements

Our IRL Reader must be able to...

- Function correctly
  - Accept and processes an image (starting with black text and a white surface but moving on from there)
  - Extract text from the image using OCR software
  - Translate the text to the user's native language
  - Read the translated text to the user
- Be portable and durable so that it can be carried for long distance
- Be able to get several hours out of one battery charge
- Operate with little delay
  - The user should not have to wait more than a 30 seconds from start to end
- Be easy to operate (short learning curve)
  - Include an intuitive interface that is easily accessible
- Be reliable
  - The device needs to be able to handle protocol failures
  - It should notify the user gracefully when the process cannot be completed
  - The system is not guaranteed to recover from hardware failures

Technical Specifications

- Hardware
  - Gumstix + audiostix2 for backend processing (www.gumstix.com)
  - Smartphone (would use for camera, Bluetooth)
  - Alternative to phone – VGA camera + LCD screen
    - http://www.sparkfun.com/commerce/product_info.php?products_id=569#
    - http://www.electronics123.com/s.nl/sc.8/category.241/.f
  - Portable DC power supply
- Software
  - OCRopus + Tesseract – OCR software released under the Apache License (http://code.google.com/p/tesseract-ocr/)
  - OpenLogos – Machine translation software (http://logos-os.dfki.de/)
  - Festvox – Speech synthesis software (http://www.festvox.org/)
- Protocols
  - Bluetooth
  - RS-232, if camera is used
  - NSSP (Network Synchronous Serial Port), used for LCD screen

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