Software Usability
Course notes for CSI 5122 - University of Ottawa

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Accessibility - Usability for the Disabled

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Types of disability

Visual impairment
- Near sightedness
- Various levels of blindness
- Poor 3-D vision
- Colour blindness

Movement impairments
- Difficulty using a mouse or keyboard
- Inability to hold down keys simultaneously
- Inability to place fingers on a touch spot

Types of disability

Cognitive and language impairments
- Dyslexia
- Difficulty remembering certain things
  —Get lost in complex displays

Other mental health issues
- Anxiety and stress
- Autism spectrum

Types of disability continued

Hearing impairments

- Inability to
  - —hear certain frequencies
  - —Distinguish spoken words
- Profound deafness

Seizure disorders

- Epilepsy
- Light and sound patterns can cause seizures
  - —A milder form of the disability results in susceptability to migraines

UI guidelines that help with accessibility

Provide undo

- Disabled may be more prone to do things that need undoing

Allow increasing font and image size, and font family

- Also allow for zooming in / magnifying

Enable of return of settings to defaults

- Needed if fonts have been set to small

Reduce memory load

- Allow taking notes, multiple clipboards, etc.
- Recognition, not recall

UI guidelines for accessibility - 2

Provide easy keyboard access or mobile-specific feature access to everything

- Some users have trouble with the mouse/trackpad

- Ensure the user can tab around all elements in a logical order

- Provide a way around the need to hold down multiple keys at once

- For keyboard shortcuts, given precedence to keys where 'control/command' and a letter key can be held together without too much reaching

- Ensure that there is always an alternative to drag and drop

- Use ESC uniformly to get out of any mode

UI guidelines for accessibility - 3

Don't make touch or mouse targets too small
- Allow a preference to make them larger
- E.g. places to drag in a graphics application

Provide descriptive text for all visual components
- E.g. 'alt' html text in an image
- Provide an option to hide the graphics entirely

Test all coloured elements for accessibility to the colourblind

UI guidelines for accessibility - 4

Allow colours to be changed through a preferences pane

Increase colour contrast beyond the bare minimum needed for sighted people

Assume the user will hear no sounds

- Don't use audio as the sole communication method

Allow users to configure the volume and frequencies of sounds

UI guidelines for accessibility - 5

Use animation and movement with care

- Flashing and blinking or repeated animation can bring on seizures or migraines

  —2-55 Hz is the problem range

  —If some form of blink is needed, do it in a small area only

  —Other problem movement

    - 'shaky camera' videos
    - Certain PowerPoint like 'transitions'

  —Allow all movement to be turned off

    - Provide alternatives (e.g. text)

UI guidelines for accessibility - 6

Don't rely on timing
- Automated slide slows
  - —Some people read too slowly
- Timeouts after no interaction detected
  - —Some people write too slowly
- Automated scrolling when dragging
  - —Extremely difficulty for some people to control

Don't rely on mousing over certain areas to get popup information

Test your software for use with assistive devices

APIs to use in order to help achieve accessibility

Apple's guidelines

Java Desktop Accessibility API

Microsoft Technologies for Accessibility

W3C guidelines
- Overview
- Web accessibility initiative
- Rich web https://www.w3.org/TR/wai-aria/

Accessible documents

Pdf files are only accessible if:

- They never embed images that contain text
  - —'Scanned' documents must be fed through OCR
  - —OCR must follow logical structure of the document
  - —Proper table of contents embedded

Word processing files are only accessible if

- They don't embed images without descriptive text
- They use proper styling
  - —Heading 1, Heading 2, etc.
  - —All formatting is done through styles

File names need to be meaningful in case people save them