CSI Clue Challenge 2015

NEO ACM CSI Clue Challenge

Initial notes on Robotic Vision, Pattern and Image Recognition

Architecture design appraoches

Robotic Vision, Pattern and Image Recognition

Proposed Architecture for Vision component integration v0.5 @kenmacpherson

Android Camera Phone

- Apk “java” program
- Mounted on Robot, UL, Cheap, rugged, well sourced, easy.
- Tons of free code, apps to do stuff.
- GPS, IMU, Camera, Wifi BUILT IN!
- Nano Httpd & restlet

Communicator (world)
Ie: http Server (json?)
- `getCameraImage();`
- `getGPSPosition();`
- `doSomething();`

Communicator (local)

Other/manipulator/

Divergence from Chpt 9
Communicator module
Bluetooth & NxT code

Computer control system
Edge Control or Central Engine
For pattern image recog reasoning

Arduinio on-Board analog control

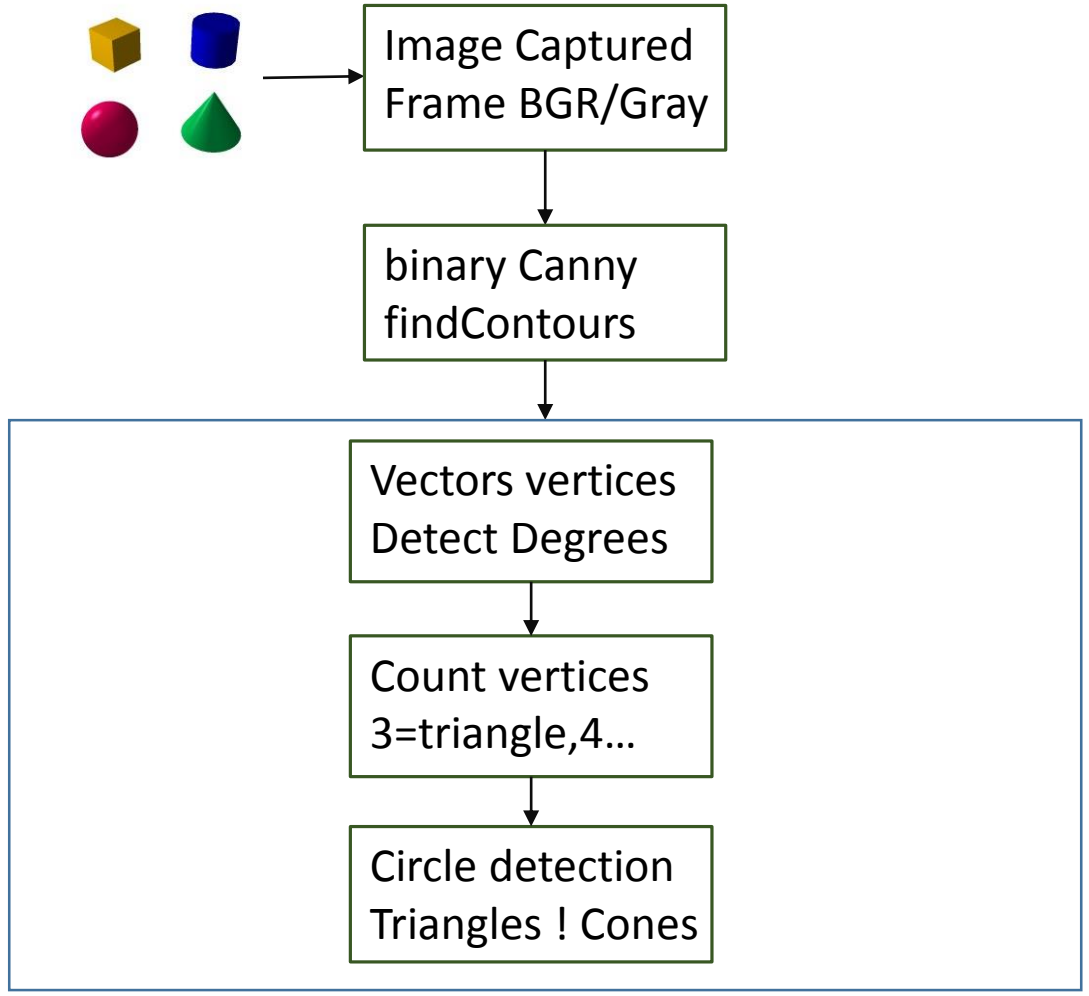
Flippy

Twisty

Vision System hardware integration
- Loosely coupled
- Plugable component design
- Extendable
- Easy enough to move computation loc
- Better distance coverage (BT)

Using openCV for Computer Vision

- OPENCV C++ Intel lib (BSD lic)
- HAAR 2001 Viola&Jones
  - ☺ Fast, handles angles, size, easy
  - ☹ Time trouble to train it
- SVM
  - ☺ super fast handles 3d movement
  - ☹ training required quick
- 2d Shapes
  - Uses vertices, quick no training
  - ☺ Uses programming logic
  - ☹ susceptible 3d-2d circle same as sphere, cylinder, bowl, cone perspective



Class Diagram vision