The Home Robot Scripting Language

The purpose of the nodes we're creating is so that we can build an API ontop of it to script the tasks for the @Home competition. We have to do 5 tasks, and it wouldn't make sense to hardcode them all. Instead, we should make a scripting language in case we want to add more tasks, quickly modify old ones, and allow portability between systems (sharing, open source.. etc).

Each specialized node that requires more advanced techniques (object recognition, speech) will present an interface to the rest of the software for the unique tasks it can complete. ROS already has nodes for navigation, speech recognition and synthesis.

Here is some documentation on what the library should accomplish.

Object Manipulation:

```
// Grabs an Object in a xyz point in the world with grip strength g
grabObject(int x, int y, int z, int g);

// Drops the current object
dropObject();

// Returns the current object held by the arm
SomeObjectType getCurrentObject();

// Return the current 3d hand point
int[] getHandLocation();

// Returns a list of the joint points
int[][] getJointPoints();
```

Person Tracking:

```
Person getPersons();
Person getPerson(Person p);
bool hasPerson(Person p);
void trackPerson(Person p);
void trackPerson(Image img);
bool isBeingTracked(Person p);
bool isBeingTracked(Image img);
Person[] getTrackedPersons();
```

Person Recognition:

```
canRecognizePerson(string person);
```

```
canRecognizePerson(Image img);
recognizePerson(Image img);
recognizePerson(string person);
```

Dynamic Obstacle Avoidance:

```
listenForObstacle();
isWaitingForObstacle();
detectsObstacleInWay();
```

Facial Recognition:

```
recognizesFace(Image img);
memorizeFace(Face f);
hasFace(Image img);
getFaces(Image img);
```

Object Recognition:

```
string[] getObjects(Image img);
bool hasObject(Image img);
```

Object Localization:

```
// Returns x,y,z of object
int[] getObjectLocation(string object);

// Returns the objects near a location
string[] objectsNearLocation(int[] loc);
```

Natural Language Processing:

Many possible functions could go here.

Proximity Sensor:

```
bool isNearObstacle();
```

```
double lengthFromObstacle();
```