Cockroaches seem to accept this robot as one of their own once it's coated with pheromone.

Science, 2007
Valentino Braitenberg

Vehicles: Experiments in Synthetic Psychology ('84)

- http://people.cs.uchicago.edu/~wiseman/vehicles/
- http://people.cs.uchicago.edu/~wiseman/vehicles/3v.mov
“Law” of uphill analysis and downhill invention

Alive

– robot.forward(c);
– robot.motors(c,c);
• Find ambient light level?
normalizedLight = \frac{\text{light} - \text{ambient}}{1.0 - \text{ambient}}
while( !MyroListener.isKeyPressed() || MyroListener.whichKey() != 'q' )
{
    //loop body
}
// get the ambient light reading by averaging the three sensors
double[] sensors = robot.getLight();
ambient = (sensors[0]+sensors[1]+sensors[2]) / 3.0;

// process until any key is pressed
while( !MyroListener.isKeyPressed() )
{
  // get the left and right light readings
  left=robot.getLight(Scribbler.SENSOR_LIGHT_LEFT);
  right=robot.getLight(Scribbler.SENSOR_LIGHT_RIGHT);

  // move toward the light at a speed proportional to
  // the normalized light reading
  robot.motors( normalize(left,ambient), normalize(right,ambient) );
}
// get the ambient light reading by averaging the three sensors

double[] sensors = robot.getLight();
ambient = (sensors[0]+sensors[1]+sensors[2]) / 3.0;

// process until any key is pressed
while( !MyroListener.isKeyPressed() )
{
    // get the left and right light readings
    left=robot.getLight(Scribbler.SENSOR_LIGHT_LEFT);
    right=robot.getLight(Scribbler.SENSOR_LIGHT_RIGHT);
    // move toward the light at a speed proportional to
    // the normalized light reading
    robot.motors( normalize(right,ambient), normalize(left,ambient) );
}
private double normalize(double val, double amb) {
    double mean = (1.0+amb)/2.0;
    double stdDev = (1.0 - amb) / 6.0;
    double num = Math.pow(val - mean, 2.0);
    double den = 2.0 * Math.pow(stdDev, 2.0);
    return Math.exp(-num/den);
}
• Love
• Explorer
• Timid
• Indecisive
• Paranoid
Reactive Behaviors

while we want to keep going
  <sense>
  <decide and then act>

• Light following
• Line following
• Refrigerator detective
• Burglar alarm
Reach the light?