**Proportional Controllers**

Yesterday in class we create a proportional controller to regulate the speed of our robot depending on its distance to an obstacle. We used three variation; for your convenience they are listed here. Use whichever you find most appropriate for your own code.

Note that each code segment requires that you have defined one or more constants; to define, for example, the constant DIST\_MAX, you would add the following line into your class, just prior to the fields:

**public** **final static** **double** DIST\_MAX = 700;

**Version 1:**

**public** **static** **double** getSpeed(**double** dist)

 {

 **return *PROP\_CONST \**** dist**;**

 }

**Version 2:**

**public** **static** **double** getSpeed(**double** dist)

 {

 **if** (dist < (***DIST\_MAX/4***))

 {

 **return** ***SPEED\_MIN***;

 }

 **else** **if** (dist < (2.0\****DIST\_MAX/4.0)***)

 {

 **return** ***2\*SPEED\_MIN***

 }

 **else** **if** (dist < (3.0\****DIST\_MAX/4.0)***)

 {

 **return** ***3\*SPEED\_MIN***

 }

 **else**

 {

 **return** ***SPEED\_MAX***;

 }

 }

**Version 3:**

**public** **static** **double** getSpeed(**double** dist)

 {

 **if** (dist < ***D\_MIN***)

 {

 **return** ***S\_MIN***;

 }

 **else** **if** (dist < ***D\_MAX***)

 {

 **return** ***S\_MAX*** / (***D\_MAX*** - ***D\_MIN***) \* (dist - ***D\_MIN***);

 }

 **else**

 {

 **return** ***S\_MAX***;

 }

 }