Laboratory Class 1

Group 1

Installation and configuration of the Boost Interval Arithmetic Library.

Group 2 (see http://pr.ssdi.di.fct.unl.pt/1718/web/resources/Lecture2.pdf)

Consider the intervals $I_1 = [0,1]$, $I_2 = [2,3]$ and $I_3 = [-2,-1]$ and compute:

2a) The left and right bounds of the intervals. (see page 10)

2b) The center and width of the intervals. (see page 10)

2c) $I_1 + I_2$, $I_2 - I_3$, $I_1 \times I_2$, $I_2 \,/\, I_3$ and $I_2 \,/\, I_1$. (see page 13)

2d) $I_1 \cap I_2$, $I_1 \uplus I_2$, $(I_2 \uplus I_3) \cap (2I_1)$ and $(I_3)^3$. (see page 9)

2e) $I_1 \times (I_2 + I_3)$ and $I_1 \times I_2 + I_1 \times I_3$. (see page 15)

2f) Let $I_1 = [0.5,1]$, $I_2 = [2,2.5]$ and $I_3 = [-2,-1]$ and compute again the expressions in **2e**. (see page 15)

Group 3 (see http://pr.ssdi.di.fct.unl.pt/1718/web/resources/Lecture2.pdf)

Consider the interval expressions $X_1 - X_1^2$, $X_1 \times (1 - X_1)$ and $0.25 - (X_1 - 0.5)^2$.

3a) Evaluate each expression with $X_1 = [0.5,2]$. (see page 25)

3b) For each expression, evaluate with $X_1 = [0.5,1.25]$ and with $X_1 = [1.25,2]$, and compute the union hull of the results. (see page 26)