

Continuous Constraint Programming

Associating Narrowing Functions to Constraints. (see Lecture4.pdf)

1. Constraint Decomposition Method

Consider the constraint $y \geq \left(x - \frac{7}{2}\right)^2 - \frac{1}{4}$ with $x \in [0, 3], y \in [-1, 1]$:

- Associate primitive narrowing functions to the constraint to narrow the domains of x and y .
- Compute the fixed-point obtained by the successive application of the above narrowing functions.

2. Constraint Newton Method

Consider the constraint $x^5 - 3x^3 + 4x - 1 = y$ with $x \in [0, 0.5], y \in [0, 1]$. Use the constraint Newton method to reduce the domains of x and y .

3. Revise Procedures

Consider the constraint $x^5 - 3x^3 + 4x - 1 = y$ with $x \in [0, 0.5], y \in [0, 1]$. Compute the box obtained by applying HC4-revise.

4. Reformulation-Linearization

Use the reformulation-linearization technique to linearize the following system within the box $[0,4] \times [0,4]$:

$$\begin{aligned}x^2 + y^2 &= 10 \\0.4y - 0.1x^2 &= 0\end{aligned}$$