**Explanation of Homework 2 – Search, fuzzy and neural**

1. This text explains in more detail the idea of homework 2.
2. The requirements for homework 2 are the following:
   1. It is a software project and must use one of the following three algorithm families:
      1. **Fuzzy Logic**
      2. **Search based on trees**
      3. **Neural Nets**
   2. It should use any real or simulated robot. I prefer a real robot from the laboratory. In such a case it can be incorporated to your project.
3. If you decide to use **Fuzzy Logic**, you have the following choices:
   1. Create an editor of motions for a robot (your favorite robot from the lab or a robot from your project). This editor must allow to describe motions/behaviors based on any variant of fuzzy logic. *Look to internet for ideas.*
   2. Use any Evolutionary Programming method to evolve robot behavior that uses Fuzzy Logic. Look to internet for ideas.
   3. Use any search method to evolve robot behavior that uses Fuzzy Logic. *Look to internet for ideas.*
   4. Use any method based on Artificial Neural Networks to evolve robot behavior that uses Fuzzy Logic. *Read about neuro-fuzzy methods in robotics from Internet.*
4. If you decide to use **search**, you have the following choices:
   1. Write a program to solve any puzzle or game, but not one that you can find on my webpage or on Internet. You can invent a new puzzle, game or problem. It needs not necessarily be related to robotics.
   2. Create an editor of motions for your robot (favorite or from your project) that uses search to generate some kind of motions or behaviors (for instance to solve Missionaires and Cannibals Problem presented in class, or similar problems, by a robot arm)
   3. Solve search problem of mobile robot collecting cans
   4. Solve search problem of a robot in labyrinth using map.
   5. Solve search problem of robot in labyrinth without a map
   6. Solve inverse kinematics problem for arbitrary robot using search. (good for Rhino robot and Bohr robot).
   7. Solve any other problem that is both related to robotics and involves search
5. If you decide to use **neural nets**, you have the following choices:
   1. Write a program to solve any puzzle or game, but not one that you can find on my webpage or on Internet. You can invent a new puzzle, game or problem. It needs not necessarily be related to robotics.
   2. Create an editor of motions for your robot (favorite or from your project) that uses neural nets to generate some kind of motions or behaviors.
   3. As above in point 5b, but use any Evolutionary Programming method to evolve parameters (weights, thresholds, etc) of a robot controller for arbitrary robot.