Assignment1: **Outdate: 29 January** **In date: 10th February**

In this assignment, each project group will select a single theme within the field of Artificial Intelligence, and will do the following:

- Do a research related to the AI system that the group is interested in designing. This means looking into the library, web, scientific papers, books, and maybe talking to others for finding out if there is already an existing system that is similar to the one the group is interested in developing. Similar Systems that have been developed recently or within the last 5-10 years would be interesting for the group to examine. If you find many similar systems, focus on the most recent ones. Examine 2-3 systems further in detail.
- Start writing a group report where you will describe these systems. This writing should be about what each system you found does overall, what kind of *architecture* each has, what components there are in each system architecture. There is no restriction on the size of this writing yet it should not be more than three A4 pages.
- If available and open source, examine the code of the existing systems and find out what kind of algorithms are used and for what particular purposes. Any specifications related to this part, should also be within these three pages.
- Next it is the time for the group to design its own AI system particularly, nothing at the coding level but at the system functionality and system architecture design level. For that reason, describe the overall objective of your AI system, describe its expected functionalities, give a PEAS description for it, and draw the system architecture. Explain each component in your design in your report.

Here is a suggested report structure:

Title of your AI system **Pg1**

Group number: Name of group member (the contribution of the group member in the work), Name of group member (the contribution of the group member in the work), Name of group member (the contribution of the group member in the work)

Introduction:

In this work, we will design and implement an AI system which does robotic space exploration.

State of the art:

In this section we will describe systems which are already available in literature or in use.

System1: The overall system objective, whom has developed it, the architecture of the system, the components and the interactions of the components in the architecture, explanation of each of the components and the interactions.

System1 - specifications: System specifications in terms of algorithms and hardware running behind the system

Title of your AI system **Pg2**

System2: The overall system objective, whom has developed it, the architecture of the system, the components and the interactions of the components in the architecture, explanation of each of the components and the interactions.

Drawing for system2 architecture

System2 - specifications: System specification in terms of algorithms and hardware running behind the system.

System3: ……

Our proposed system:

In this section we will describe our AI system which does robotic space exploration.

The overall goal of our system: ……

The functionalities of our system: ……

PEAS description: ……

Pg3

Drawing for our proposed system architecture

Explanation of the architecture, each component, relationships among components.

Explanation of the differences of proposed architecture from the existing ones in state of the art section.

References:

Links to web, research articles….

Working style:

Each student works within a project group composed of maximum three members. Each group with the consensus from all group members of the group should select a theme. Within that theme, design and

describe an AI system. Your design may be inspired from what is available in literature, existing research projects at HIG or elsewhere, in market however, your particular design should have differences from what is already available and your contribution should be clearly accessible from your descriptions and writing of your design.

Delivery:

1) Each groups submits one reports which is a cooperation among group members on fronter under group number by 23.59, February 9th.
2) Each group prepares a few slides to present the work done either on 10th February or 17th February, according to the lists for presentation that will be announced on fronter.
3) 50 % of the group grade comes from the presentation and the other 50% from the report. Each group member in principle receives the same grade with the members. However, if there are any observed major difference among the group members, then the grading may differ from member to member.