Innovation Lab @ KU Leuven:
Education, Engineering and Artificial Intelligence

Wannes Meert, Vincent Nys, Steven Lauwereins, Robin Theunis, Thomas Fannes, Monique Ingels, Tias Guns, Guy Van den Broeck, Kurt Driessens, Danny De Schreye, Marian Verhelst

Faculty of Engineering, KU Leuven, Belgium

KU Leuven faculty of Engineering's Innovation Lab is an initiative to enthuse high school students to become engineers and scientists by having them build an actual real-life device. In project days at their local schools, students are challenged to design and assemble themselves hardware and software to achieve a given task, serving society.

Two of the challenges that have been developed within Innovation Lab are related to artificial intelligence:

1. EOG: Build an electrooculograph eye motion sensor to control a device. Patients with, for example, ALS cannot control their arm muscles precisely making it hard to steer a wheelchair, or control a PC mouse. The students develop their own hardware to measure the bio-potential present around the eye, decide how to translate the analog signal to digital, design a smart algorithm to recognise looking left, right, up and down, and, finally, design a game where a wheelchair moves through a maze, controlled by these eye movements.

2. PokerDemo: Build an expert system that plays poker. Poker is a challenging game where you continuously need to adapt to your opponents' strategies. Each student team constructs rules to steer an autonomous poker bot. These rules are uploaded to a server where all bots designed by the students in a classroom compete in a tournament. The bots play multiple games per second and the average profit decides who is in the lead. Students will need to adapt their bot to new behaviour exposed by other bots as fast as possible to become or stay the top player (the PokerDemo is currently available as a package seperate from Innovation Lab).

Participating schools in Flanders receive a box containing the required hardware, software and manuals for the complete project. All material is compatible with a standard desktop computer. Students design and assemble the new hardware components on top of a 5 by 10 cm custom Innovation Lab circuit board. Solutions to the software challenges are expressed in an intuitive, programmable MIT Scratch(-like) environment. Innovation Lab also organizes teach-the-teacher trainings to participating high school teachers.

More information: `http://eng.kuleuven.be/innovationlab`