

During the second block of the PDEng program, MSD trainees have worked on their first in-house project. The problem statement provided to the trainees was to develop an autonomous referee system, AutoRef, which is able "To have a 5 minute long 2 against 2 robot soccer game, using the Tech United robots, refereed by AutoRef, which receives a positive recommendation by an experienced human referee". Among other reasons, this project is motivated by the need for impartiality and objective data-based decision making in soccer matches. It is an ongoing project done in partnership with Tech United, and this cohort's efforts build upon those of previous years. The project helped the trainees build skills in project and stakeholder management, system architecture, team science, and software development.

An example of a rule violation detected by the AutoRef system can be seen in the video found [here](#).

The developed system generates warning messages for rule violations detected in real match data, for example, when the ball crosses the field boundary line, whether the ball rolls freely for 0.5 m after a kick, etc. The system also indicates the last robot that touched the ball in order to correctly assign possession for a throw in, goal kick, or corner kick.

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