Building a dictionary of synonyms by games

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**Abstract.** In these days, building vocabulary requires the work of experts because the computer still cannot recognize semantics between words. Problem is that this type of work is very expensive. Therefore, our goal is to create a game that will collect synonymous relationships between words. This game will be played by ordinary people so we will use the power of the crowd to create a dictionary.

# Introduction

In articles [1, 2], the author came up with the idea that the time spent playing games could be used to solve problems without the player realizing it. With this concept came games with purpose which combine pleasant with useful and they are designed to solve problems in a funny way.

An important aspect of making the task a fun experience is to add game features to the system where task is solved. Adding these gaming elements is used to make games with purpose more attractive and is called Gamification [3].

In this work, we focused on creating and evaluating synonymous relationships using voting game with purpose, as the search for semantic relationships between words is so demanding [4].

# Proposed system

The system will be created using a framework called ASP.NET MVC[[2]](#footnote-2), which is a web application framework developed by Microsoft. It is part of the programming language C#. As a database server, we chose Microsoft SQL Server.

Because our priority goal is not to create synonymous relationships but to evaluate them, our application needs a table filled with the relationship between the words. To get this table we created a crawler by which we filled the table with the relationship between the words from one of the internet synonymous dictionaries. We saved only relations and not the distance between the synonyms. We do not need these distances because by evaluating these relationships by players, we want to get our own order of individual synonymous relationships. It is not necessary to have an entry database filled with data from a synonym dictionary. It is also possible to use a table of semantic relations where it is not guaranteed that the words are synonymous. This adjustment would require more respondents to correctly identify the synonymous relationship between words.

We have displayed all the options from the player's view using the use case diagram (see Figure 1).

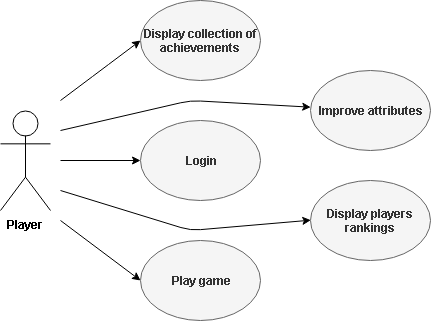


Figure 1 Use cases diagram for player

To make the game more attractive, we have chosen a theme from the past and the player's interaction will be based on bow shooting to targets. His mission is to shoot (click) on a certain number of targets where the words will be displayed. The player must consider which of the words have the strongest synonymous relationship to the task word and select them in that order. This task word is unique for each round and is assigned at its beginnings. The player will also receive the possible words from which he will be able to choose. His choice is then evaluated by the number of experiences based on previous responses of other players to the same task and possible bonuses.

In addition to the archery theme, we added other game elements to motivate the player and make the game more enjoyable:

1. Rewarding players – as already mentioned the player get experience from selecting words, for which he increases his level.
2. Tree of skills– the next game add-on are four skills that can be improved by players based on their achieved levels. They get one point for each level, and for the five points, they can improve the level of one of the skills. Maximum level of skill is five. Here is a list of skills that are in game:
   1. Power – will determine the number of arrows in each round. At the same time, by enhancing this skill, you will get a new visual for arrows as well as successes for the collection
   2. Horizon – by upgrading, player unlocks a greater number of targets in each round. Thanks to this skill, he can also get two achievements in the collection.
   3. Stamina – this feature provides an increase of time that is given to player each round and two successes to the collection.
   4. Smartness – with this attribute, the player gets bonus points to experience from select words. He can also get two achievements to the collection.
3. Collection of achievements – players have the opportunity to get achievements for reaching the circumstances. Two of the categories are displayed along with the name of the player in the rankings using the icon. The other two are already in the rankings so we do not want to show them implicitly. Players can get achievements in the following circumstances:
   1. Achieving certain levels
   2. Getting a certain number of points per game
   3. Enhancement of attributes
   4. Achieving the number of synonymous evaluations
4. Players rankings – this indicator serves to compare players by the levels and the number of synonymous evaluations. It displays the statistics of the top five players and compares them with the statistics of the currently logged-in player.

# Conclusions

In the conclusions you should summarize your contribution. Throughout the entire paper it is important to use proper English grammar and use a formal style of writing. Your supervisor will be helpful in advising you on the content of your paper. We wish you good luck in writing your paper.

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If your paper was written as a part of a research project it is recommended to add an Acknowledgement at the end of the paper.

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2. <https://dotnet.microsoft.com/apps/aspnet/mvc> [↑](#footnote-ref-2)