

**Assignment**

**Assignment Exercises**

1. ***Hidato***, also known as “Hidoku”, is a logic puzzle game invented by an Israeli mathematician. The goal of Hidato is to fill the grid with consecutive numbers that connect *horizontally*, *vertically*, or *diagonally*.

You are given the following grid and asked to solve it as a *constraint satisfaction problem* with some Python code using the package python-constraint. Note that the numbers you fill the grid should be unique.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | 12 | 7 |  |
|  | 35 | 37 |  |  |
|  |  | 8 |  |  |
| 20 |  |  | 16 | 28 |
|  | 32 |  |  |  |

1. Write some Python code to create a word cloud on the topic “Deep Learning” from Wikipedia. Your word cloud should be generated on the given shape “up\_arrow.png”.
2. Explain, with some illustrations, the following recommender systems:

* Content-Based Filtering
* User-Based Collaborative Filtering
* Item-Based Collaborative Filtering

1. By referencing to the example AI\_Chatbot.ipynb, create a similar chatbot on the topic “Deep Learning” from Wikipedia.
2. Write some Python code with OpenCV to complete each of the following tasks:
   1. Blending images on “desktop\_computer.png” and “sales.png”
   2. Edge detection on “girl\_face.jpg”
   3. Face detection on “happy\_people.jpg”

**Note:** Save all your works in a single Jupyter Notebook file (.ipynb) and submit it to the Moodle by ***Sunday, 10 October 2020*** (23:55).

**\*\*\* End of Assignment \*\*\***