# Assessment form Assignment Introduction to Machine Learning

## Assessment criteria

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| **1. Report quality** |
| * All parts of the work are clearly described. * The report has a logical structure. * The report is of appropriate length. * Language is unambiguous and easy to read. * Correct use of spelling and grammar. * Layout is appropriate. * Figures and tables are used appropriately. * References are in accordance with APA style. |
| **2. Implementation** |
| * Data exploration, preprocessing, model building and evaluation are correctly implemented. * Implementation matches the description in the report. * Suitable libraries are included and effectively used. * Code is clearly documented. * Code is of high quality. |
| **3. Data exploration** |
| * The data set is correctly loaded. * Sufficient data exploration is done. * Results of data exploration are clearly presented, possibly by means of graphs and tables. * Results of data exploration are interpreted correctly. |
| **4. Data preprocessing** |
| * Necessary preprocessing steps are correctly determined on the basis of the results of data exploration. * Preprocessing steps are described in sufficient detail. * Results of data preprocessing are clearly described. |
| **5. Prediction model** |
| * An appropriate prediction model is selected. * The choice for the model is well motivated. * The model is correctly built. |
| **6. Evaluation experiment** |
| * An experiment is conducted in the right way to compare the effectiveness of the selected model. * The outcomes of the evaluation experiment are clearly presented. * The outcomes of the evaluation experiment are interpreted correctly. |

## Rubrics

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| **Criterion** | **0 poor** | **1 insufficient** | **2 sufficient** | **3 good** | **4 excellent** |
| 1. Report quality | The report is incomplete or the structure or language is so poor that it is not understandable. | The report does not describe all parts of the work or the structure, language or formatting contains mistakes that make the report hard to read. | The report describes all parts of the work. The structure, language or formatting contains mistakes, but these do not hamper readability. | The report clearly describes all parts of the work. The structure, language and formatting are sufficient. | The report clearly describes all parts of the work. Structure, language and formatting are professional. |
| 2. Implementation | Code is incomplete or does not work. | Some parts of the code are not implemented correctly, code is not in line with the report or documentation is missing. | All parts are implemented correctly in line with the report. Documentation is sufficient. | All parts are implemented correctly in line with the report. Code is of high quality and makes use of suitable libraries. Documentation is sufficient. | All parts are implemented correctly. Code is professional and makes use of suitable libraries. Documentation is professional. |
| 3. Data exploration | The data is not correctly loaded or no meaningful data exploration is done. | The data set is correctly loaded. Data exploration is insufficient or the interpretation of results is incorrect. | The data set is correctly loaded. Data exploration is sufficient.  Results of data exploration are presented and interpreted correctly. | The data set is correctly loaded. Data exploration is extensive.  Results of data exploration are clearly presented and interpreted correctly. | The data set is correctly loaded. Data exploration is extensive. Creative exploration methods are applied leading to surprising result.  Results of data exploration are presented in a professional way and interpreted correctly. |
| 4. Data preprocessing | No or incorrect preprocessing has been done. | Some preprocessing has been done but essential steps are missing. | Necessary preprocessing steps are done, but the motivation for these steps is weak. Results are described but not in detail. | Necessary preprocessing steps are correctly determined and motivated. Some alternatives are explored. Steps are described in sufficient detail. Results are sufficiently described. | Necessary preprocessing steps are correctly determined and well-motivated with the help of literature. Various alternatives are considered. Steps are described in detail.  Results are clearly described. |
| 5. Prediction model | No or an unsuitable model is selected. The choice is not correctly motivated. No correct model is built | A suitable model is selected but the choice is not or not correctly motivated or the model is not correctly built. | A suitable model is selected. Some valid motivation is provided. The model is correctly built. | A suitable model is selected. Alternatives are discussed. The choice is motivated by considering literature and properties of the data. The model is correctly built. | A suitable model is selected. All relevant alternatives are discussed. The choice is thoroughly motivated by considering literature and all relevant properties of the data. The model is correctly built. |
| 6. Evaluation experiment | No or no correct experiment is done to evaluate the effectiveness of the model.  The outcomes of the experiment are not or not correctly presented or interpreted. | An experiment is conducted to evaluate the effectiveness of the model.  Presentation of the outcomes of the experiment is insufficient or the outcomes are not interpreted correctly. | An experiment is conducted in the right way to evaluate the effectiveness of the model. The outcomes of the evaluation experiment are sufficiently presented.  The outcomes of the evaluation experiment are interpreted correctly. | An experiment is conducted in the right way to evaluate the effectiveness of the model.  The outcomes of the experiment are clearly presented.  The outcomes of the evaluation experiment are interpreted correctly in the context of the original problem. | Extensive experiments are conducted in the right way to evaluate the effectiveness of the model. The outcomes of the experiment are presented in a professional way.  The outcomes of the evaluation experiment are interpreted correctly in the context of literature and the original problem. |

## Scores to grades conversion

To get a passing grade at most one criterion can be assessed as *insufficient* or less and at the same time at most one criterion can be assessed as *poor*. If these conditions are not met but the score is still 10 or higher, the grade will be 5.0.

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| **Score** | **Grade** | **Score** | **Grade** | **Score** | **Grade** |
| 0 | 1.0 | 9 | 4.5 | 18 | 8.5 |
| 1 | 1.0 | 10 | 5.0 | 19 | 8.5 |
| 2 | 1.0 | 11 | 5.5 | 20 | 9.0 |
| 3 | 1.5 | 12 | 6.0 | 21 | 9.0 |
| 4 | 2.0 | 13 | 6.5 | 22 | 9.5 |
| 5 | 2.5 | 14 | 7.0 | 23 | 10.0 |
| 6 | 3.0 | 15 | 7.0 | 24 | 10.0 |
| 7 | 3.5 | 16 | 7.5 |  |  |
| 8 | 4.0 | 17 | 8.0 |  |  |