

## Try TIES 4911 (2023): Guidelines for the MiniProject\_Task

**Your team:**

- name surname



This task is a kind of mini project for those who would like to get extra 2 credits (total 10 credits). Task could be performed in a group of two or individually. Take one of the options for the task completion:

**Option 1:** Think about real-life use case that requires custom object detection (instance segmentation), describe a problem behind this case and the way it could be resolved. Build your custom dataset and train a custom Object Detection or Instance Segmentation model using any of the approaches from (Lecture 5 and Lecture 6). Demonstrate the result. Write a kind of step-by-step tutorial of your solution implementation.

**Option 2:** Think about a use case involving an object tracking. Describe a problem behind this case and the way it could be resolved. Study corresponding literature and tutorials to better familiarize yourself with appropriate approach(es). Implement a solution and demonstrate the result. Write a kind of step-by-step tutorial of your solution implementation.

**Option 3:** Think about real-life use case that uses pose-estimation technique. Describe a problem behind this case and the way it could be resolved. Build a custom dataset and train a custom model. Demonstrate the result. Write a kind of step-by-step tutorial of your solution implementation.

**Option 4:** Think about anomaly detection use-case, find or create(preferable) a corresponding dataset. Search and study suitable Deep Learning based approaches to address this issue (e.g. AutoEncoders, or something else). Implement your solution, describe the process and demonstrate the result. Write a kind of step-by-step tutorial of your solution implementation.

**Option 5:** Think about use of synthesized dataset to train the model (classification, object detection, OCR, etc.) to be used on real test data. Since the model performance usually very low when trained on basic initial synthesized data, focus on techniques to enrich the synthesized data with features of the real data to improve the test accuracy of the model. Implement your solution, describe the process and demonstrate the result. Write a kind of step-by-step tutorial of your solution implementation.

**Option 6:** Review Transformer model in general and study some of the particular Transformer based language models. Chose some problem domain, and try to fine-tune the chosen model based on specific custom dataset in the context of some NLP related problem (e.g. text classification, text summarization, question/answer task, sentiment analysis, language translation, etc.). Implement your solution, describe the process and demonstrate the result. Write a kind of step-by-step tutorial of your solution implementation.

**Option Joker:** Suggest your own interesting case for the MiniProject with practical customized use of Deep Learning technology. Idea should be discussed with the lecturer and, if agreed, could be selected for the MiniProject.

Files to include in the demo results (archive file [ties4911-MiniProject\\_task-\(your\\_surname\).zip](#)):

- *MiniProject\_Task-instructions.doc (this file)*
- *PPT presentation with relevant information*
- *dataset*
- *source codes*

Send the results as an archive to lecturer (oleksiy . khriyenko @ jyu . fi) before the deadline (end of 02.05.2024).

Results should be present during the Demo-MiniProject Session. Be sure that you have all the necessary adapters to connect your computer in the classroom (if applicable).