

## **PRACTICAL WORK No. 7-8**

Topic: Designing the Structure of a Thesis and the Logic of Scientific Research

**Student: Didar Kanalbay**

**Group: sis-2224**

**Thesis Topic: Creating a multiclass model for detecting destructive web content in social networks and instant messengers using machine learning**

Date: February 22, 2026

# **1. COMPLETE TABLE OF CONTENTS**

Introduction

Chapter 1. Theoretical Foundations of the Research

- 1.1 Analysis of the subject area
- 1.2 Review of methods and approaches
- 1.3 Comparative analysis of existing solutions
- 1.4 Conclusions for the chapter

Chapter 2. Methodology and Development of the Solution

- 2.1 Problem statement
- 2.2 Selection of methods and tools
- 2.3 Development of a model / algorithm
- 2.4 System architecture
- 2.5 Conclusions for the chapter

Chapter 3. Experimental Part

- 3.1 Description of data and experiment
- 3.2 Experimental methodology
- 3.3 Results
- 3.4 Analysis of results
- 3.5 Comparison with analogues
- 3.6 Conclusions for the chapter

Conclusion

References

Appendices

## 2. CONNECTION BETWEEN CHAPTERS AND RESEARCH OBJECTIVES

### Research Objectives (defined for the thesis topic):

- O1: To analyze the subject area of destructive web content in social networks and messengers
- O2: To study and compare existing methods and approaches for content classification
- O3: To develop a multiclass classification model for detecting destructive content
- O4: To implement and experimentally validate the proposed solution
- O5: To compare the developed model with existing analogues

### Mapping: Research Objective -> Thesis Chapter

Objective O1 -> Chapter 1 (Sections 1.1, 1.2)

Objective O2 -> Chapter 1 (Sections 1.2, 1.3)

Objective O3 -> Chapter 2 (Sections 2.2, 2.3, 2.4)

Objective O4 -> Chapter 3 (Sections 3.1-3.4)

Objective O5 -> Chapter 3 (Section 3.5)

### 3. TABLE LINKING OBJECTIVES AND STRUCTURE

Research objective	Thesis section	Methods	Expected results
O1	Ch.1 1.1, 1.2	Literature review, analysis	Taxonomy of destructive content
O2	Ch.1 1.2, 1.3	Comparative analysis	Overview of ML approaches
O3	Ch.2 2.2-2.4	ML modeling, design	Multiclass model architecture
O4	Ch.3 3.1-3.4	Experiments, metrics	Performance metrics
O5	Ch.3 3.5	Benchmarking	Comparison table

### 4. CONTENT OF EACH SECTION

#### Introduction

Relevance of the problem; scientific novelty; goal and objectives; research methods; structure of the thesis.

#### Chapter 1. Theoretical Foundations

##### 1.1 Analysis of the subject area

Types of destructive content (hate speech, extremism, cyberbullying, misinformation, etc.); characteristics of social networks and messengers; legal and ethical aspects.

##### 1.2 Review of methods and approaches

Supervised learning for text classification; NLP techniques (tokenization, embeddings); deep learning (CNN, RNN, Transformers); multiclass classification approaches.

##### 1.3 Comparative analysis of existing solutions

Review of academic and industrial solutions; comparison of accuracy, interpretability, and scalability.

##### 1.4 Conclusions for the chapter

Summary of findings; justification for the chosen approach.

## **Chapter 2. Methodology and Development**

### **2.1 Problem statement**

Formal statement of the multiclass classification problem; definition of classes of destructive content; requirements for the model.

### **2.2 Selection of methods and tools**

Choice of ML framework (e.g., scikit-learn, PyTorch); selection of preprocessing and feature extraction methods.

### **2.3 Development of a model / algorithm**

Description of the multiclass model architecture; training and validation procedure; hyperparameter tuning.

### **2.4 System architecture**

Pipeline for data ingestion, preprocessing, inference; integration with social network/messenger APIs.

### **2.5 Conclusions for the chapter**

Summary of the developed solution.

## **Chapter 3. Experimental Part**

### **3.1 Description of data and experiment**

Datasets used (e.g., Hate Speech, Jigsaw, custom datasets); data preprocessing; train/validation/test split.

### **3.2 Experimental methodology**

Evaluation metrics (accuracy, F1, macro/weighted); cross-validation; experimental setup.

### **3.3 Results**

Tables and figures with experimental results.

### **3.4 Analysis of results**

Interpretation of results; error analysis; discussion.

### **3.5 Comparison with analogues**

Comparison with baseline and state-of-the-art methods.

### **3.6 Conclusions for the chapter**

Summary of experimental findings.

## 5. LOGICAL MODEL OF THE THESIS STRUCTURE

Scientific problem -> Goal -> Objectives -> Chapters -> Methods -> Results -> Conclusions

### **Applied to the thesis topic:**

Scientific problem: Proliferation of destructive content in social networks and messengers threatens user safety and requires automated detection.

Goal: To create an effective multiclass model for detecting destructive web content using machine learning.

Objectives: O1-O5 (as defined above).

Chapters: Ch.1 (theory) -> Ch.2 (methodology) -> Ch.3 (experiments).

Methods: Literature review, comparative analysis, ML modeling, experimental validation.

Results: Trained model, performance metrics, comparison with analogues.

Conclusions: Validation of the approach; recommendations for practical use.

## **6. AVOIDING COMMON MISTAKES**

- Ensure each chapter directly addresses at least one research objective.
- Use specific section titles (e.g., "Multiclass classification using BERT" instead of "Methods").
- Align practical experiments (Ch.3) with the model developed in Ch.2.
- Avoid duplicating content between theoretical review and methodology.