

## ДОДАТОК А

### Конфігурація DeBERTa АТЕ з інтеграцією NER

```
# Configuration for Aspect Term Extraction using DeBERTa with
NER features

model:
  name: "microsoft/deberta-v3-base"
  type: "ate"
  task: "token_classification"
  architecture: "deberta"
  num_labels: 5 # B-ASP, I-ASP, B-OP, I-OP, O
  dropout: 0.1

  # Model architecture parameters for NER integration
  combine_ner_method: "concatenate" # Options: concatenate,
add, gate
  ner_embedding_dim: 64 # Dimension for NER tag embeddings
  ner_vocab_size: 19

data:
  max_seq_length: 128
  train_batch_size: 16
  eval_batch_size: 32
  train_size: 0.7
  val_size: 0.15
  test_size: 0.15

training:
  num_epochs: 10
  batch_size: 16
  learning_rate: 2e-5
  weight_decay: 0.01
  warmup_steps: 500
  gradient_accumulation_steps: 1
  max_grad_norm: 1.0
  save_steps: 500
  eval_steps: 500
  logging_steps: 100

  # Early stopping
  early_stopping_patience: 3
  early_stopping_threshold: 0.001

optimizer:
  type: "adamw"
  betas: [0.9, 0.999]
  eps: 1e-8

scheduler:
  type: "linear"
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warmup_ratio: 0.1

evaluation:
  metrics: ["precision", "recall", "f1", "accuracy"]
  average: "weighted"

logging:
  level: "INFO"
  log_predictions: true
  wandb:
    enabled: false
    project: "comment-absa-ner"
    run_name: "deberta-ate-ner"

paths:
  data_dir: "./data"
  model_dir: "./models/ate_with_ner"
  log_dir: "./logs/ate_with_ner "
  output_dir: "./outputs/ate_with_ner "
  ner_model_path:      "./models/ner/ner_model_final_20250520-204254.keras"
  ner_word_tokenizer_path:
    "./models/ner/ner_artifacts/word_vocab.json"
  ner_tag_vocab_path:
    "./models/ner/ner_artifacts/tag_vocab.json"

ner:
  max_seq_length: 128
  use_ner_preprocessing: true
  ner_weight: 0.4
```

## ДОДАТОК Б

### Конфігурація ансамблю моделей розпізнавання емоцій

```
# Configuration for Ensemble emotion recognition model

model:
  type: "ensemble"
  models:
    - type: "distilbert"
      model_name: "distilbert-base-uncased"
      weight: 0.5
    - type: "twitter-roberta"
      model_name: "cardiffnlp/twitter-roberta-base-emotion"
      weight: 0.5
  num_classes: 6
  voting_strategy: "soft" # Options: soft, hard
  dropout_rate: 0.3
  max_length: 128

training:
  # Ensemble training strategy
  strategy: "joint"

  # Individual model training (paths for individual models if
  strategy were "individual")
  individual_configs:
    - "configs/distilbert_config.yaml"
    - "configs/twitter_roberta_config.yaml"

  # Joint training (if strategy is "joint")
  batch_size: 32 # Potentially increase if memory allows
  learning_rate: 2e-5 # Adjusted, common for transformers
  num_epochs: 5
  warmup_steps: 200
  weight_decay: 0.01
  gradient_clip_norm: 1.0
  mixed_precision: true # Ensure this is true for AMP
  device: "auto" # Auto-detect device or specify "cpu" or "cuda"
  loss_type: "cross_entropy" # or focal
  # focal_loss_gamma: 2.0 # if loss_type is focal
  # label_smoothing: 0.0 # if needed

data:
  max_length: 128
  text_column: "text"
  label_column: "label"
  train_split: 0.8
  val_split: 0.1
  test_split: 0.1

# Data loading
```

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batch_sizes:
  train: 32 # Ensure this matches training.batch_size
  validation: 32
  test: 32

shuffle:
  train: true
  validation: false
  test: false

num_workers: 4 # Ensure this is set, was 0 in attachment

preprocessing:
  # Use preprocessing optimized for each model
  adaptive: true

  # Default preprocessing (when not adaptive)
  lowercase: true
  remove_urls: true
  remove_mentions: true
  remove_hashtags: false
  remove_extra_whitespace: true
  remove_stopwords: false
  expand_contractions: true

  # Emoji handling
  emoji_handling: "convert"

  # Special tokens
  add_special_tokens: true

evaluation:
  metrics:
    - "accuracy"
    - "f1_macro"
    - "f1_weighted"
    - "precision_macro"
    - "recall_macro"
    - "roc_auc"

  # Individual model evaluation
  evaluate_individual: true

  # Visualization options
  plot_confusion_matrix: true
  plot_training_history: true
  plot_embeddings: true
  save_predictions: true
  plot_ensemble_analysis: true

paths:
  data_dir: "data"
  model_dir: "models"
```

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output_dir: "outputs"
log_dir: "logs"
cache_dir: "cache"

logging:
  level: "INFO"
  format: "%(asctime)s - %(name)s - %(levelname)s - %(message)s"

device:
  # Auto-detect device or specify manually
  auto_detect: true
  force_cpu: false

# Emotion labels (must match dataset)
emotions:
  - "sadness"
  - "joy"
  - "love"
  - "anger"
  - "fear"
  - "surprise"
```

## ДОДАТОК В

## Архітектура моделі BiLSTM-CRF NER



