

Comparative analysis of my projects

1 Generative Models for Missing Data Recovery

This project will use different techniques to fill in data that is missing in datasets. The techniques are GANs, normalizing flows, diffusion models and BERT.

1. *The impact* Project enhances the reliability of AI models by enabling them to make predictions even when data is incomplete, thus reducing the need for data preprocessing and improving usability in real-world scenarios.
2. *The consistency* Statistical analysis and experimental validation will confirm the effectiveness of each approach across several datasets and model architectures.
3. *The novelty* Usage of different generative models for data recovery, especially diffusion models and BERT-like architectures.
4. *My contribution* I will experiment with and compare different generative models, and evaluate their impact on AI models for regression and classification tasks.
5. *The project focuses* Demonstrating how generative models can be effectively utilized for missing data recovery and their impact on model performance.

2 The Impact of Synthetic Data on Text Summarization Quality

This project explores how using synthetic data improves russian text summarization models.

1. *The impact* The project explores the potential of synthetic data to enhance summarization quality.
2. *The consistency* Performance will be evaluated using summarization datasets and metrics, ensuring robust and repeatable results.
3. *The novelty* The project uses synthetic data as a means of solving the problem of data scarcity in russian text summarization tasks, comparing its effect across abstractive and extractive methods.

4. *My contribution* I will design and implement synthetic data generation techniques, evaluate their integration into summarization workflows, and measure the resulting impact on model performance.
5. *The project focuses* Demonstrating how synthetic data can address data limitations and improve the effectiveness of summarization models.

3 Systems of AI equations

This project explores solving systems of equations derived from interconnected AI models with dependent targets, analyzing the accuracy and stability of these multi-target solutions.

1. *The impact* This project could improve the efficiency of complex AI applications, especially those with interconnected model dependencies, by developing solutions that optimize and stabilize predictions.
2. *The consistency* Mathematical validation and empirical testing on synthetic and real data will ensure reliable performance.
3. *The novelty* Unlike typical single-target AI models, this project introduces methods for solving interdependent target systems.
4. *My contribution* I will investigate the accuracy and numerical properties of this approach.
5. *The project focuses* Analyzing and improving multi-target AI systems by developing reliable solutions for systems of AI-based equations.