# Nurdaulet Mukhituly

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## Education

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| **Mohamed bin Zayed University of Artificial Intelligence** | *Abu Dhabi, UAE* |
| PhD in Natural Language Processing | *Aug 2024 – Jun 2028* |

- **Academic Supervisors:**
  Prof. Kentaro Inui (kentaro.inui@mbzuai.ac.ae);
  Prof. Preslav Nakov (preslav.nakov@mbzuai.ac.ae)
- **Research Topic:** AI Safety, Mechanistic Interpretability
- **Coursework:** Natural Language Processing, Trustworthy ML, TinyML and Large Language Models

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| **Mohamed bin Zayed University of Artificial Intelligence** | *Abu Dhabi, UAE* |
| MSc in Machine Learning, CGPA: 3.77/4.0 | *Aug 2022 – Jun 2024* |
| **Nazarbayev University** | *Astana, Kazakhstan* |
| BSc in Computer Science, CGPA: 3.31/4.0 | *Aug 2018 – Jun 2022* |

## Experience

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| **Etihad Airways** | *Abu Dhabi, UAE* |
| *Data Science Intern* | *May 2023 – Jul 2023* |

- Proposed and built a ticket sales dashboard that automated data extraction for flight analysts, **reducing** processing time **from 500 ms per route** to **10 ms across multiple routes**.
- **Developed** a dynamic calendar-view dashboard to track holidays, enabling analysts to adjust ticket prices in real-time based on demand patterns.
- **Integrated** GPT-3.5 to retrieve country-specific holiday data, enhancing the accuracy of calendar insights for data-driven decisions.
- Used Python, PyTorch, PostgreSQL, PySpark, Hadoop.

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| **Beeline Kazakhstan / VEON** | *Remote, Kazakhstan* |
| *Big Data Analyst (NLP)* | *Jun 2022 – Sep 2022* |

- **Designed and deployed** a real-time dashboard to monitor chatbot usage metrics, supporting proactive insights and early detection of potential model issues, causing an increase in productivity increase of entire business unit.
- **Enhanced** intent recognition accuracy for Kazakh language chatbot **by 12%** through dataset curation and refinement.
- **Clustered** Russian-language utterances by topic and visualized insights, providing clear data representation for topic-based analysis.
- Used Python, PyTorch, PostgreSQL, PySpark, Hadoop, Dash, Docker

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| **Nazarbayev University** | *Astana, Kazakhstan* |
| *Research Assistant* | *Jun 2020 – Jun 2022* |

- Developed a Deep Learning model for Cough Classification using audio data, achieving **85%** diagnostic accuracy for **4** classes
- Improved cough detection accuracy from **70% to 92%** by implementing a larger dataset and improving preprocessing techniques.
- Automated the audio data acquisition process, **significantly reducing** the manual workload for research team members.
- Used Python, TensorFlow, PyTorch, librosa, sklearn, OpenCV

## Projects & Publications

**SPIRIT: A Defense Framework for Speech Language Models Against Adversarial Attacks**:
Amirbek Djanibekov, **Nurdaulet Mukhituly**, Kentaro Inui, Hanan Aldarmaki, Nils Lukas. Under Review at ACL 2025. *February 2025*
**Stack:** Python, PyTorch, Hugging Face

**KazMMLU: Evaluating Language Models on Kazakh, Russian, and Regional Knowledge of Kazakhstan** ☒: Mukhammed Togmanov, **Nurdaulet Mukhituly**, Diana Turmakhan, Jonibek Mansurov, Maiya Goloburda, Akhmed Sakip, Zhuohan Xie, Yuxia Wang, Bekassyl Syzdykov, et al. arXiv preprint arXiv:2502.12829
*February 2025*
**Stack:** Python, PyTorch, Hugging Face

**Sherkala-8B-Chat** ☒:
Fajri Koto, Rituraj Joshi, **Nurdaulet Mukhituly**, Yuxia Wang, Zhuohan Xie et al. Developed state-of-the-art Kazakh language models, contributing to synthetic data generation, performance evaluation, and safety alignment to enhance model robustness and real-world applicability. *February 2025*
**Stack:** Python, PyTorch, Hugging Face

**Qorgau: Evaluating LLM Safety in Kazakh-Russian bilingual contexts** ☒
Maiya Goloburda, Nurkhan Laiyk, Diana Turmakhan, Yuxia Wang, Mukhammed Togmanov, Jonibek Mansurov, Askhat Sametov, **Nurdaulet Mukhituly**, Minghan Wang, Daniil Orel, et al. arXiv preprint arXiv:2502.13640.
*February 2025*
**Stack:** Python, PyTorch, Hugging Face

**TDRL$** ☒: Enhanced an existing deep learning architecture to improve its adaptability with financial data, focusing on recovering latent causal variables and mitigating issues such as distribution shifts commonly encountered in financial contexts. These improvements optimize model predictions in volatile markets, providing more accurate, reliable insights for financial analysis compared to the previous models. *May 2024*
**Stack:** Python, PyTorch

**PipeMaxViT** ☒: Achieved a **100% increase** in goodput by merging Pipeline Parallelism with Distributed Data Parallelism, resulting in a faster, more efficient model training and development workflow. This hybrid approach not only reduced overall training time but also enabled more seamless scaling, making it suitable for large-scale models with high computational demands. *May 2023*
**Stack:** Python, PyTorch, TorchGPipe

## Awards & Recognitions

**ADIA Lab Market Prediction Competition:** Designed and implemented a predictive model, ranking in the **top 8%** (29th out of 375 participants) on the private leaderboard and earning the **Stable Model Prize** for performance consistency. *November 2023*

**MBZUAI MSc Scholarship:** Awarded admission to the Mohamed bin Zayed University of Artificial Intelligence MSc program with a competitive 8% acceptance rate. Scholarship included a **monthly stipend**, accommodation, and medical insurance. *February 2022*

## Technologies

**Programming Languages:** Python, C++, PostgreSQL, MySQL, Bash, Java
**Frameworks:** PyTorch, Hugging Face, sklearn, TensorFlow, Keras, Flask
**Tools & Platforms:** Docker, Spring, Git, PySpark, Hadoop, DigitalOcean