Shyryn Ospanova

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Sciences, Philadelphia, PA *Sep 2021 - May 2025*
B.S.E in Systems Science and Engineering, Minor in Mathematics and Statistics.
Relevant Coursework: Advanced Linear Algebra, Engineering Probability, Dynamic Systems, Decision Models, Big Data Analytics, Data Structures and Algorithms, Stochastic Systems Analysis and Simulation, Statistics for Data Science.
Activities: Penn Data Science Group, TA for Introduction to Open Source Hardware and Software Systems.

INDUSTRY EXPERIENCE

Cerebra AI | *Machine Learning Engineer,* Palo Alto, CA *Jun 2024 – Sep 2024*

- Developed a production-grade ASR model for Russian and Kazakh languages, integrating RAG and custom preprocessing techniques to reduce Word Error Rate (WER) by 20%; deployed in two hospitals and enhanced clinical efficiency through scalable inference on 60 hours of data using NVIDIA Riva
- Researched interpretability of stroke detection models with Grad-CAM++, providing generalized visual explanations for model decisions in medical imaging; augmented Latin corpus by 6000+ tokens for domain-specific vocabulary.
- Designed and trained an AttentionUNet model for tumor segmentation, achieving a 72% F1 score in detecting intracerebral hemorrhage through a custom encoder-decoder architecture.
- Led the research, development, and implementation of a multi-token prediction and shared trunk architecture for an auto-completion project aimed at supporting doctors with radiology documentation; spearheaded precise radiology scan modifications using multimodal vision-language understanding with the Qwen2-VL model.

Litigence | *Applied AI Researcher,* Oslo, Norway *May 2024 – Jul 2024*

- Engineered LangChain powered Knowledge Graph for 10,000+ patents for query answering and knowledge extraction.
- Developed RAG search system to streamline patent retrieval across multiple documents, effectively utilizing UMAP to reduce high-dimensional embeddings and reduced query response latency by 85% compared to semantic search.

NKM Capital| *Data Science in Residence,* San Francisco, CA *Jun 2023 – Sep 2023*

- Devised a strategy for deal flow pipeline by analyzing early-stage YC startups and web scraping 1,500 M&A and IPO deals, identifying key patterns and early signals to enhance data-driven decision-making and support thesis development.
- Engineered an algorithm to solve the rank aggregation problem for the portfolio company, resulting in an 8% improvement in F1 score accuracy across a multi-platform dataset (Google Reviews, Yelp, OpenTable).

PROJECTS

Recurrent LidarNet|*Python, PyTorch, CUDA, ROS2* *April 2024*

- Extended 1D-CNN TinyLidarNet with a bidirectional LSTM + self-attention module, lifting lap-completion reliability from 30–78 % to 100 % on F1TENTH tracks and cutting average lap times by 11%. Quantized to TFLite INT8 (XNNPACK) and TensorRT FP16, achieving < 3 ms CPU and < 0.6 ms GPU inference while maintaining full generalization across novel tracks.

AirTwin|*Python, YOLO5, Point Cloud Processing, OpenCV, PyTorch, dust3r* *Oct 2024*

- Engineered GPU-accelerated camera-based 3D reconstruction to deliver on-site digital twins in <1 s (20× faster vs. dust3r); fused LiDAR + camera for SLAM mapping; utilized RL wildfire-spread model to generate real-time threat maps, boosting unburned-area preservation to 70.15% from 11.76%.

Beyond School|*Python, OpenCV, YOLO* *Aug 2022*

- Produced the first public curriculum on Neural Networks and Computer Vision (OpenCV) for 500+ learners. Designed presentations and devised scripts for over 15 YouTube video-lessons with 7500+ views.

RESEARCH EXPERIENCE

Institute of Smart Systems and Artificial Intelligence |*Research Intern*, Astana, Kazakhstan *Jun 2021 – Aug 2021*

- Simulated vaccination policies using agent-based modeling to identify the most effective strategies for reducing disease transmission; modeled sterilizing and effective immunization outcomes by adding 4 new SEIR states.
- Published paper in *IEEE* titled "A Vaccination Simulator for COVID-19:Effective and Sterilizing Immunization Cases."

Yale School of Medicine | *Research Assistant*, New Haven, CT *Jul 2020 – Jun 2021*

- Developed analysis on lung cancer survivability with 94% accuracy; implemented a novel approach to incorporate quantitative and qualitative multivariate analysis using Python and TCGA on 20 Gigabytes PET/CT scans, leading to significant differentiation between lung squamous cell carcinoma and adenocarcinoma.
- Published findings in Nature and PLOS One, focusing on differential immuno-metabolic crosstalk in lung cancer types and carnitine palmitoyltransferase-1 impact on breast cancer prognosis.

SKILLS

Languages: (Proficient) Python, R, MATLAB, NoSQL, SQL, HTML/CSS, Java.
Industry Knowledge: Machine Learning, NLP, Computer Vision, Statistical Analysis, Knowledge Graphs, Neural Networks, CNN, RNN, Foundation Models, Generative AI, Data Pipeline Development, Deep Learning, Data Engineering, LLMs.
Technologies/Frameworks: PyTorch, Git, TensorFlow, REST API, Pandas, AWS, NumPy, HuggingFace, ROS, JAX, CUDA.