Curriculum Vitae

Azamat (Aza) Tulepbergenov

Research Software Engineer
Google Research
aza.tulepber@gmail.com • https://atulep.github.io

EDUCATION

B.S., Computer Science, Honors College, Boise State University, May 2018

PROFESSIONAL EXPERIENCE

Research Software Engineer, Google DeepMind, April 2024 – present
The goal of this project is to develop a behavior change agent that offers personalized coaching to help users improve their sleep habits and address sleep-related challenges.

- Studied effect of Big Five personality traits on personalization of human-AI interaction.
- Built a baseline BERT-based classifier for each Big Five trait using PyTorch.
- Explored how data scale affects the accuracy of LLM predictions for Big Five traits, providing empirically backed guidelines for practical applications.
- Currently preparing to publish the findings at the Association for Computational Linguistics in February 2025.

Research Software Engineer, Google Research, May 2023 – present
This project aims to turn AI research advancements into practical solutions that enhance human health using Google Cloud and Google Search products.

- Fine-tuned Gemini foundational models for healthcare applications (MedPaLM).
- Developed automated evaluation methods to assess summarization capabilities of MedPaLM on large-scale clinical data.
- Created a novel method to improve the helpfulness and factual accuracy of AI-generated summaries for health-related Google Search queries. Successfully deployed this solution as a live experiment in Google AI Search Overview, leading to measurable improvements in key Search performance metrics.

Software Engineer, **Google Cloud**, Aug 2021 – May 2023

- Developed and maintained new features for an open-source Python code generator that converts APIs defined in Protocol Buffer files into executable Python libraries, widely utilized by Google Cloud customers.

Research Software Engineer, **Google Research**, Jul 2020 – Oct 2023
The goal of this project was to use reinforcement learning (RL) to develop a dialogue agent that avoids being short-sighted (outputting generic utterances) and maximizes overall user satisfaction.

- Implemented NLP models (Transformer, RNN) and reinforcement learning (RL) algorithms (Q-learning, actor-critic, and model-based approaches) using TensorFlow.
- Analyzed the impact of sentiment-based and string-based rewards on the learned policy.
- Built a custom visualization pipeline with scikit-learn to showcase the diversity of the learned latent space.
- Designed a human evaluation rubric and developed an evaluation platform using Google Forms.
- Published findings in two conference papers presented at [C3] and [C2].

Software Engineer, **Google Assistant**, May 2018 – Aug 2021

- Created a Command Line Interface (CLI) for the Google Assistant API, utilized by millions of developers globally.
- Collaborated with cross-functional teams to produce technical documentation and tutorials, and oversaw extensive internal testing efforts.

PUBLICATIONS

Journals

- [J1] E. Morrill, **A. Tulepbergenov**, C. Stender, R. Lamichhane, R. Brown, T. Lujan. A Validated Software Application to Measure Fiber Organization in Soft Tissue. *Biomech Model Mechanobiol* (*Dec 2016)*. 15(6):1467-1478. PMID: 26946162

Conferences

- [C4] G. Tennenholtz, Y. Chow, CW. Hsu, J. Jeong, L. Shani, **A. Tulepbergenov**, D. Ramachandra, M. Mladenov, and C. Boutilier. Demystifying Embedding Spaces using Large Language Models. *Proceedings of the Twelfth International Conference on Learning Representations (ICLR-2024)*
- [C3] D. Gupta, Y. Chow, **A**. **Tulepbergenov**, M. Ghavamzadeh, and C. Boutilier. Offline Reinforcement Learning for Mixture-of-Expert Dialogue Management. *Proceedings of the Thirty-Seventh Annual Conference on Advances in Neural Information Processing Systems (NeurIPS-2023)*
- [C2] Y. Chow, **A. Tulepbergenov**, O. Nachum, M. Ryu, M. Ghavamzadeh and C. Boutilier. A Mixture-of-Expert Approach to RL-based Dialogue Management. *Proceedings of the Eleventh International Conference on Learning Representations (ICLR-2023)*
- [C1] **A. Tulepbergenov**, E. Morrill, C. Stender, R. Lamichhane, R. Brown, T. Lujan. FiberFit: A Validated Software Application to Measure Fiber Organization in Soft Tissue. *Proceedings of the 2016 Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C 2016)*

Workshops

- [W1] Y. Chow, **A. Tulepbergenov**, O. Nachum, D. Gupta, M. Ryu, M. Ghavamzadeh, and C. Boutilier. A Mixture-of-Expert Approach to RL-based Dialogue Management. *Foundation Models for Decision Making at Proceedings of the Thirty-Sixth Annual Conference on Advances in Neural Information Processing Systems (NeurIPS-2022)*

PRESENTATIONS

- **A. Tulepbergenov** and E. Davis. Generating Code Variants Using Data Flow Graphs. *2018 Undergraduate Research and Scholarship Conference at Boise State University*

PATENTS

- Y. Chow, A. Tulepbergenov, O. Nachum. Mixture-Of-Expert Approach to Reinforcement Learning-Based Dialogue Management. U.S. Patent Application 18/173,495, Nov. 2023, pending

ACADEMIC SERVICE

- Reviewer at NeurIPS 2023, ICML 2023 and NeurIPS 2021