Alexander **Karpekov**

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Looking for: Opportunities in AI and ML research and/or startup space with a focus on model interpretability, explainability, and causal impact. Join a small and dynamic team that values diverse strengths and has a shared vision for impact and success. Looking for in-office or hybrid opportunities. Preferred location: NYC.

Experience: AI researcher and Data Scientist with 10 years of Academic, Big Tech, and startup experience. Completed second Master's in CS while working full time at Google and being promoted twice. Studied and worked in 9 cities across 5 countries.

EDUCATION

Georgia Institute of Technology
2024 | Atlanta, GA | 3.9/4.0

MS in Computer Science
Machine Learning Specialization

Completed 2nd Master's Degree remotely while working full time at Google. Finished the degree in person on Atlanta campus.

University of California, San Diego
2015 | San Diego, CA | 3.8/4.0

MA in Economics

Worked as a Teaching Assistant for 3 graduate-level classes in Statistics and Econometrics, leading sessions for 120+ students. Received the best TA award.

Moscow State University
2013 | Moscow, Russia | 92/100

BA in Political Science

SKILLS

Programming (in order of proficiency)**:** Python, SQL, JavaScript, TypeScript, R, Stata, C, Java.

ML & Data Science: PyTorch, TensorFlow, Keras, Hugging Face (Transformers & Datasets), LangChain, LanceDB, Scikit-learn, Statsmodels, XGBoost.

Data Analysis and Visualization: NumPy, Pandas, SciPy, Jupyter, Colab, Matplotlib, Altair, Plotnine.

Front End: Svelte, D3, Tailwind CSS, Figma, Adobe Illustrator.

Languages: EN, RU, FR, DE, ZH**.**

HOBBIES

Rowing (GeorgiaTech Crew), CrossFit (8 years), Snowboarding, Rock Climbing.

EXPERIENCE

GEORGIA TECH | AI Research Scientist
2023 – Present | Atlanta, GA

Transformer Explainer: Developed an interactive educational tool to explain transformer models, using Svelte Kit and Transformers.js [link]. Working with Professor Polo Chau.

***Publication** [under review]: Submitting a paper to IEEE VIS Conference.*

- Built a visualization tool that demonstrates the functionality and architecture of GPT-2, including token prediction and temperature sampling. Used Svelte and D3

Automated Human Activity Recognition: Developed an AI system to recognize and analyze human activity patterns using in-house sensor data. Working with Professor Sonia Chernova.

***Publication** [under review]: Submitting a paper to IMWUT journal.*

- Utilized pre-trained BERT model, fine-tuned on sensor data using mask-language modeling and triplet loss.
- Used this model to generate embeddings of sensor firing sequences. Clustered embeddings to identify groups of spatial and temporal human activities.
- Created cluster and sensor sequence interpretability tool using D3.

GOOGLE | Senior Data Scientist (L5) @ YouTube and Google Search
2017 – 2024 | San Francisco, CA and Dublin, Ireland

EXPERTISE: Statistical analysis using A/B testing and causal impact methodologies like propensity score matching; Clustering and classifications tasks; Embedding space construction; User data analytics and visualization, managing datasets with billions of entries.

Project Highlights:

- Developed a pathfinding algorithm in song embedding space, improving music recommendations that led to 3% boost in user engagement and music discovery rates.
- Implemented a new methodology to cluster YouTube multi-billion music corpus using text, sound, search, and co-watch embeddings, which led to a 30% reduction in harmful watchtime and a 0.5% increase in music revenue ($100s millions).
- Created a new counterfactual causal impact methodology to evaluate the impact of the new feature launch on user engagement and conversion that helped establish no statistically significant long-term effects on key business metrics. The analysis was instrumental to halt the global rollout at Engineering and Product VP-level.

DATAMINR | Data Analyst
2015 – 2017 | New York, NY and London, U.K.

- Built statistical models to automatically classify Twitter user handles.
- Conducted Twitter user clustering and unsupervised learning using networks analysis methodologies to improve news discovery algorithms.
- Led company-wide effort for reporting automation using Python instead of Excel.