# Kateryna Morhun

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## Education

**Massachusetts Institute of Technology (MIT)** Cambridge, MA
- BS in Computer Science; AI and Society Concentration Class of 2025 (GPA 5.0)
- Coursework: Advanced NLP, Applied Statistics, AI Decision Making & Society, Data Visualization

## Work Experience

**Johns Hopkins Center for Language and Speech Processing (CLSP) - AI-curated Democratic Discourse** June 2024-Present
*Machine Learning Engineer, Software Engineer, Researcher* Baltimore, MD
- Developed a recursive, heap-based algorithm for balancing diversity and quality of social media post stacks
- Aligned LLM annotations of social media posts to human annotations via experimentation to improve model reliability in a dev environment; Achieved 85+% alignment.
- Rapidly prototyped a human annotation dataset creation pipeline in 48 hours
- Prepared training data for an embedding-based model to identify agreement/disagreement in social media posts
- Consistently met project deadlines by translating numerous research ideas into actionable development steps and facilitating effective communication, dependency management, and knowledge transfer across subteams
- Fostered interdisciplinary collaboration and grounded technical project components in sociological origins
- Designed and executed a detailed, intuitive 15+ minute technical talk illustrating project results to 60+ stakeholders
- Authored comprehensive Digital Ocean server monitoring and downtime detection; Developed onboarding documents

**MIT CS+AI Lab - Decentralized Information Group** February 2024-Present
*Researcher* Cambridge, MA
- Researched & cataloged 100+ AI legislation & auditing requirement documents

**City Form Lab** September 2023-January 2024
*Researcher - Tile2Net: pedestrian infrastructure mapping* Cambridge, MA
- Committed 4000+ lines of detailed documentation on an open-source computer vision tool
- Developed 3 ways to run the tool, including Google Colab and High Performance Clusters
- Cleaned 200+ sq mi of GIS tile input data to the model

**US Department of Transportation - Volpe Center** June 2023-August 2023
*Data Scientist* Cambridge, MA
- Modernized and developed full-stack GIS webapps in ESRI ecosystems to ease equitable transportation policy
- Rapidly prototyped a 10-20x speedup for generating “high injury networks” with a novel network analysis approach
- Analyzed and condensed 5GB+ datasets (US Census Data) using Pandas and Arcpy to extract insights
- Elicited $10k+ from sponsors for future development with persuasive technical communication

**Experimental Study Group** February 2023-May 2023
*Teaching Assistant - Differential Equations* Cambridge, MA
- Mentored students (n=10) in weekly office hours to help them in their studies

**FindOurView** May 2022-August 2022
*Full-Stack Developer* Remote
- Refactored frontend from Vue 2.0 to Vue 3.0
- Facilitated dozens of Django and PostgreSQL database migrations in 3 novel site features
- Implemented over 10% increase in Selenium CI/CD test script efficiency and coverage

**Digital Humanities Lab** September 2021-May 2022
*Researcher - Gender Analysis Toolkit; Self-Sustaining Cities* Cambridge, MA
- Assured RESTful Django API for word distinctiveness analysis algorithms
- Compiled 20+ city documents and primary sources about community-building in self-sustainable black neighborhoods
- Presented to 30+ fundraisers about my research

## Leadership/Other Experience

**Ukraine Ministry of Education Scholar Support Office** February 2023-August 2023
- Facilitated development of an online hub for Ukrainian displaced scientists, to be presented to the Ministry of Education

**Deep Learning; Data-Centered AI (Intro Classes)** January 2023
*1st place competition winner* Cambridge, MA

- Reduced bias and uncertainty in risk-aware models using the Capsa and Cleanlab libraries
- Built, trained, and improved deep learning models to generate music and recognize faces using TensorFlow

**MIT Ballroom Dance Team** May 2022-Present
*President/Captain, Treasurer, Webmaster, Funding Coordinator* Cambridge, MA

- Coordinated 60+ dancers, 7 officers, and 8 coaches in reviving the MIT Open ballroom competition with 700+ competitors
- Managed $100,000+ in team assets, expenses, revenue, and donations to maintain sustainable operations
- Reignited intrateam socialization and community and returned them to pre-COVID-19 levels

## Awards/Grants

**3x grant winner** ($13,000) from MIT Council of the Arts (CAMIT) 2022, 2023, 2024
**5x grant winner** ($9,000) from MIT Large Events Fund (LEF) 2021, 2022, 2023, 2024
**1st place winner** - MIT Deep Learning Competition with ThemisAI 2023
**Top 10% entries** - Khanacademy 2020 Breakthrough Junior Challenge 2020

## Skills/Interests

**Technical**: Python, PyTorch, Sklearn, Numpy, Pandas, TensorFlow, High-Performance Computing, ESRI ArcGIS, Arcpy, Typescript, Javascript, CSS, HTML, C, Vite, Django, Git, SQLite, Docker, Vue, React
**Languages**: English (Fluent), Ukrainian (Fluent)
**Personal**: Quick learner, Easily connect with people, Project management, Negotiation, Policy research
**Interests**: Pre-champ competitive ballroom dancing, Anatomically accurate crochet, Dungeons & Dragons