Olga Kuzmich

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EDUCATION

Johns Hopkins University, Baltimore, MD **Expected May 2027**
B.S. in Applied Mathematics and Statistics, M.S.E. in Data Science **Cumulative GPA:** 3.92/4.00

Independent coursework: Deep Learning School by MIPT: Semester-long course on machine learning fundamentals, CNN architectures, transfer learning, segmentation and detection, autoencoders, and (GANs).

Awards:

- RISE Global Winner 2022 - recognized by Forbes, one of the 100 Global Winners selected from 80,000 applicants worldwide; received a merit-based full-ride scholarship at any university in the world.
- Best JHU student employee nominee 2025.

EXPERIENCE

Center for Data Science in Emergency Medicine, *Data Scientist,* Baltimore, MD 02/24 – Present

ESBL Prediction Project

- Secured a position during my freshman year, joining the top 5% of JHU undergraduates involved in paid research.
- Developed and trained advanced ML models (CatBoost, CNN, LSTM, CRNN) to predict ESBL in ED patients.
- Achieved a ROC AUC score of 0.78-0.87 for different decision-making timepoints, surpassing all published approaches for ESBL prediction.

QTC Prolongation Project

- Developed and evaluated multiple ML models (Logistic Regression, Decision Tree, Random Forest, XGBoost) to predict antibiotic-induced QTc prolongation, achieving 91.8% accuracy (vs. 75% with current clinical questionnaire).
- Model approved for integration into EHR systems, reducing adverse event tracking time from days to seconds.

CONFERENCES & PUBLICATIONS

- **Olga Kuzmich**, Xihan Zhao, Jerald Cherian, Sara E Cosgrove, Jeremiah S Hinson, Eili Klein, P-1594. Predictive models to improve antibiotic decision-making in the Emergency Department for Extended-Spectrum β-Lactamase-producing *Enterobacterales* infections, *Open Forum Infectious Diseases*, Volume 12, Issue Supplement_1, February 2025, ofae631.1761, https://doi.org/10.1093/ofid/ofae631.1761

PROJECTS

Moles Semantic Segmentation

- Implemented SegNet, UNet, and UNet2 for medical image segmentation, achieving 71.2% IoU (best with SegNet + Focal Loss).
- Designed custom loss functions (BCE, Dice, Focal) in PyTorch, improving accuracy by 8.2% by mitigating class imbalance.
- Built an end-to-end training pipeline with data loading, IoU evaluation, and visualization, accelerating experimentation.

Full-stack Data Annotation Web App

- Designed and developed a scalable web application using Flask, HTML/CSS, and JavaScript to streamline AI dataset labeling workflows. Deployed the app on Heroku.
- Integrated PostgreSQL database to securely manage user authentication, annotation data storage, and real-time progress tracking for 50+ concurrent tasks.
- Engineered automated task assignment logic, reducing manual workload by 40% while ensuring balanced distribution across annotators.

SKILLS

- Python (pandas, numpy, matplotlib, scikit-learn, OpenCV, PyTorch, Flask), R (tidyverse, ggplot2), C/C++, Java, SQL, Bash, HTML, CSS, JavaScript; Git/Github, LaTeX;