EKATERINA IVSHINA

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EDUCATION

Princeton University September 2019 - Present
Bachelor of Arts in Physics (minor: Statistics and Machine Learning)
Coursework: Java Programming, Reinforcement Learning, Linear Algebra, Electromagnetism, Quantum Mechanics
Self-study: Machine Learning, Computer Vision, Algorithms and Data Structures
Skills: Python, Tensorflow, MATLAB, Java, C++, Mathematica, Git, Linux, LaTeX, SLURM, CUDA, OpenCL
GPA: 3.7/4.0

RELEVANT EXPERIENCE

Harvard Medical School, Martinos Center for Biomedical Imaging, Intern June 2020 - Present
- Implemented GANs, CNNs, and Computer Vision techniques for motion correction & denoising of diffusion MRI
- Performed large-scale distributed training on a computing cluster

Princeton University, Astrophysics Department, Research Assistant February 2020 - Present
- Studied transit timing variations to search for evidence of tidal orbital decay of hot Jupiters
- Developed a parallelized protocol in Python to fit transit models and analyze light curves
- Applied Markov chain Monte Carlo methods to estimate the uncertainties and produce O-C diagrams

GenusOne Inc., Machine Learning Intern May 2019 - Present
- Ideated and created a song identification application using persistent homology techniques (Python)
- Presented geometric approach to designing cryptographic protocols (Mathematica)
- Created/tested original ML applications and developed documentation for the company's platform (LaTeX)
- Implemented GPU-based versions of kNN and SVM classifiers in C++ (OpenCL and CUDA)
- Presented my work to investors - former members of **Apple Industrial Design Group**

Princeton University, Pace Center for Civic Engagement, Service Fellow May 2020 - Present
- Connected talented students from under-resourced areas to work with researchers from Princeton, Yale, etc.

Princeton Prison Teaching Initiative, Racial Justice Fellow July - August 2020
- Created lectures & assignments for the first ever Java-based Computer Science class taught in NJ prisons (LaTeX)

Princeton University, Mathematics Department, Teaching Assistant August 2020 - Present
- Lead problem solving sessions for the "Single Variable Analysis with an Introduction to Proofs" class

Solar Physics Summer Researcher June - July 2019
- Conducted independent work analyzing solar flare time-series to predict coronal mass ejections
- Created topological data analysis-based classifier in Python from scratch
- Presented the results to physics and astrophysics professors

Engineering Summer Academy at Penn, Robotics program (grade: A+) July 2018

Yale Young Global Scholars Program, Engineering Session June 2018

MIT Global Teaching Labs, Cryptography Course (grade: A) January 2018

PUBLICATIONS

- Robin Etzel, Choukri Mekkaoui, **Ekaterina S Ivshina** et al., submitted to ISMRM 2021. *"Coil Design Impacts Image Encoding: Optimized 64-Channel Array Configurations for Diffusion-Weighted Imaging in 3T Cardiac MRI"*

ACCOMPLISHMENTS

- All-Russian **Astronomy Olympiad** - ranked top 3 in state, top 50 nationally (2018, 2019)
- Invited to showcase my research to **Prime Minister of India** and **President of Russia** (2018)
- **Euro-Asian Astronomical Society Award** (2018)
- Winner, "Scientists of the Future" international research competition (INTEL ISEF qualifying fair, 2018)
- **20+ national and state awards** for achievements in playing the Domra, a Russian folk string instrument