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, Honors Analysis, Honors Linear Algebra, Electromagnetism, Quantum Mechanics
Self-study: Machine Learning, Computer Vision, Algorithms and Data Structures
Skills: Python, MATLAB, Java, C++, Mathematica, Git, Linux, LaTeX, SLURM, CUDA, OpenCL
GPA: 3.7/4.0

RELEVANT EXPERIENCE

Harvard Medical School, Medical Imaging Intern June 2020 - Present
- Used Generative Adversarial Networks and Computer Vision for motion correction in dynamic imaging
- Applied the algorithm to diffusion magnetic resonance images to increase the SNR (Python)

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 analyze and fit transit models to 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)
- Developed documentation for the company's platform (LaTeX)
- Implemented GPU-based versions of kNN and SVM classifiers in C++ (OpenCL and CUDA)
- Applied an original machine learning classifier to identify transiting planets and achieved a recall of 91%

Princeton University, Pace Center for Civic Engagement, Service Fellow May 2020 - Present
- Advanced the mission of equality of opportunity by connecting 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 and assignments for the first ever Java-based Computer Science curriculum in NJ prisons (LaTeX)

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

Engineering Summer Academy at Penn, Robotics program July 2018
- In team, designed in SolidWorks & programmed in Arduino a guitar playing robot from scratch (received A+)

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."Coil Design Impacts Image Encoding: Optimized 64-Channel Array Configurations for Diffusion-Weighted Imaging in 3T Cardiac MRI". Submitted to ISMRM 2021

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