

# EKATERINA IVSHINA

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## EDUCATION

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### 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

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### 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, 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, 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

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- 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

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- 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)
- 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