

Pavel Komarov

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EDUCATION

- Georgia Institute of Technology, Atlanta, GA** **2011 – 2017**
- MS Electrical and Computer Engineering, extra CS and bioscience, 4.0 GPA 2015 – 2017
 - BS EE, CS minor (Machine Intelligence), extra natural science, 4.0 GPA, Highest Honors, Senior Scholar Award 2011 – 2015

EXPERIENCE

- Northrop Grumman – Melbourne, FL** **2017 – Present**
- Advanced Battle Management Systems: Creating a system to classify aircraft types from flight tracks and improve combat identification to answer DARPA and DoD's push for AI in Command and Control 2018 – 2019
 - Algorithms, Common Open Mission Software Architecture: Wrote learning models from scratch, investigated data, created an automatic end-to-end pipeline to find best hyperparameters with Bayesian Optimization, designed a fast database on top of memory-mapped arrays, wrote a module to recursively save arbitrarily-structured models 2017 – 2018
- Microsoft – Mountain View, CA – Intern, Outlook Team** **2014 & 2015**
- Developed a strategy to detect stuck Exchange mobile clients and recover them with a state reset 2015
 - Created the first platform for discovering insights about Outlook users by examining mailbox content 2014
- Georgia Institute of Technology – Teaching Assistant** **2012 – 2017**
- Signals and Systems & Digital System Design - School of Electrical and Computer Engineering 2015 – 2017
 - Object Oriented Programming in Java - College of Computing (lots of debugging students' code) 2013 – 2015
 - Calculus II/III Teaching Assistant and Math Tutor - School of Mathematics (teaching on my own) 2012 – 2013
- Georgia Institute of Technology – Research Assistant** **2012 – 2016**
- Yi Lab, Biology: Applied ML techniques (mostly feature reduction) to look for patterns in high-dimensional epigenetic microarray data and classify samples as diseased vs not diseased 2016
 - Starner Lab, Human Centered Computing: Designed, assembled, and programmed a wearable rehabilitation device 2016
 - Stanley Lab, Biomedical Engineering: Developed a tool to put data in Neurodata Without Borders format 2016
 - Filler Lab, Chemical Engineering: Studied plasmon resonance in Si nanowires, used cleanroom equipment 2012

SKILLS

- Artificial Intelligence:** Implemented Search Strategies, Boosting, Decision Trees, RL, Bayesian Inference, GANs, Recurrent and Convolutional Nets, Clustering. Cast problems as Mathematical Optimization. Capable with TensorFlow and the like. Seen enough to be able to pair problems with methods then find and understand the right papers.
- Python:** My primary language at NG, anything data science, familiar with sklearn and common packages, parsers
- Java:** TA for two years (recitations, grading, office hours), personal projects: picture sorter, movie rating system, minesweeper
- C/Microcontrollers:** Devised a suite of middleware functions, numerous linear control algorithms for a lab course.
- MATLAB:** Prototyping control systems, brain simulations, a machine learner for Computer Vision, and more
- Control Systems/Robotics:** Designed and implemented motor controllers on real hardware, simulated control of swarms and nonlinear control. Executed SLAM on a small mobile robot. Derived robot spatial equations.
- Signal Processing:** Convolution, norms and vector spaces, coded Kalman Filter and Conjugate Gradient Descent.
- JavaScript/Front-end Web:** Read all of Eloquent JavaScript (book), often deploy my work to pavelkomarov.com.

SELECTED PROJECTS

- Exportify – exportify.net** **2019**
Couple dozen global users per month. Created to answer “What sort of music do you like?” Interacts with Spotify's Web API to fetch song data and save as .csv. Data analysis provided by my Jupyter Notebook on Binder.
- Projection Pursuit Regressor and Classifier – pypi.org/project/projection-pursuit** **2018**
More than 8000 pip installs! Found, studied, and implemented a paper generalizing this ML model to multivariate output. I particularly recommend my explanation of how it works linked from the readme: pavelkomarov.com/projection-pursuit/math.pdf
- Automatic Trader – Machine Learning for Trading** **2016**
Extracted technical indicators from market data, fed to machine learner, invented a trading strategy to utilize predictions, and simulated. Performed Mean Variance Portfolio Optimization. Also tried a Reinforcement Learner to find optimal action.
- Table-Digitizer – Computer Vision** **2014**
Implemented an Extreme Learning Machine in Matlab using academic literature alone and trained it to classify CIFAR-10. Part of a project to make a computer capable of reading and digitizing hand-written spreadsheets.
- HW/SW systems programming – GT Solar Racing, Electrical Team** **2013 – 2014**
Programmed TIC2000 microcontroller to communicate with a Digi Xtend wireless module via SCI. Wrote a Java program to read serial data from a corresponding module connected to a PC. Created extensible libraries for subsystems like GPIO, SCI, Clocks, and ADC to make building complex programs easier. <https://github.com/pavelkomarov/TI-C2000-middleware>