Ilya Kavalerov

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Software & Projects

o **Signal Processing Projects** Autoregressive modeling of speech, frequency detection with MUSIC, filter banks and wavelets, structured SVMs for audio to sheet music transcription, dimensionality reduction and embeddings, image segmentation with shape priors.

o **Auto-Cropper for Art** An unsupervised algorithm that detects the edges of artworks in images, and rotates/crops the images to eliminate the background. A writeup explaining the theory and code is available online.

o **Languages** Python, Matlab, Ruby (proficient), C, Cuda, Javascript (competent), R, Scala, Prolog (familiar).

Experience

o **UMIACS, UMD**   **College Park, MD**
RA, EE Advisor: Rama Chellappa, Math Co-Advisor: Wojtek Czaja   *Summer 2017–Present*

  - Designing feature extractors with custom invariances for classification and domain adaptation.
  - Studying scattering networks to form a full mathematical understanding of CNNs in Deep Learning.

o **Artsy Inc.**   **New York**
Software Engineer   *Fall 2013–Summer 2015*

  - Consolidated event stream architecture, streamlined the offline data processing workflow.
  - Expanded and maintained the API and other platform services.
  - Explored art sales data and implemented algorithmic batch processes.

o **Cahill Lab, GWU**   **Washington DC**
Student Researcher   *Fall 2009–Fall 2012*

  - Computationally modeled crystal structures from single crystal x-ray diffraction data.
  - Discovered novel organometallic materials with applications in medical imaging, electro-optical devices, and radiation detection.

Education

o **University of Maryland**   **College Park**
PhD Electrical Engineering   *Fall 2015–Present*

  - *Coursework Highlights: Harmonic Analysis, Real Analysis I & II, Advanced DSP, Estimation and Detection, Random Processes, Information Theory*

o **Columbia University**   **New York**
Post Baccalaureate   *2014–2015*

  - *Coursework Highlights: Machine Learning, Advanced Machine Learning*

o **George Washington University**   **Washington DC**
BS in Chemistry, BA in Honors English   *2009–2013*

  - *Thesis: The Cognitive and Emotional Neural Processes of Inter-subjectivity*

Honors

o 2015: Top 3rd percentile finish in the Kaggle Diabetic Retinopathy Challenge
o 2013: Sylvia Speck Prize for Exemplary Achievement in English Literature
o 2012: George Gamow Research Fellowship Award
o 2010: Chemical Rubber Company Freshman Achievement Award
o 2006, 2007: Violin: Two time winner of the Golden Key Competition, played in Carnegie Hall NYC