



Andrew Oustimov MPH

Training Background/Current Position:

Andrew is an interdisciplinary scientist primarily trained as a biostatistician and currently working in the field of breast cancer research in the Computational Breast Imaging Group (CBIG), Center for Biomedical Image Computing and Analytics (CBICA), Department of Radiology at the University of Pennsylvania. Research interests are generally focused on medical imaging, genomic, and clinical aspects of the battle against cancer. While working to provide statistical support for clinicians, epidemiologists, and engineers, Andrew is also interested in the development of an integrated framework capable of leveraging artificial intelligence to combine and process information from multiple channels/sources, such that it can be most useful for guiding personalized clinical recommendations with respect to cancer screening, prognosis, and prediction of treatment response. Expertise includes all aspects of statistical modeling and inference (e.g. study design, hypothesis refinement, linear/non-linear/multilevel/longitudinal models, purposeful model selection, missing data, propensity score, and sampling methods). Fluency in machine/statistical learning, including dimensionality reduction, feature design and extraction, kernel machines (e.g. SVMs), and neural networks (e.g. deep convolutional nets and unsupervised deep belief networks/auto-encoders). Andrew is proficient in SAS, R, and Python.

Research Projects:

- Adaptation of Deep Learning methodology to issues relating to breast cancer screening, prognosis, and prediction of treatment response, a convolutional neural network approach.
- Prediction of false negative breast cancer screens, a preliminary evaluation of a quantitative breast complexity index.
- Identification and characterization of computational breast imaging phenotypes.
- Comparison of breast cancer screening outcomes across image acquisition technologies.