CHRIS MALEC, Ph.D.

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EDUCATION

PhD Physics: Georgia Institute of Technology
Advisor: Dragomir Davidovic
B.S. Physics: University of Wisconsin-Madison
Data Science Specialization:
Coursera (Johns Hopkins)
Springboard: Data Science Career Track (in progress)

SKILLS

Programming and Analysis: Python / Visual Python **|** Jupyter | R | Caret | ggplot2 | Autocad **|** Unix shell scripting **|** Labview **|** LaTeX **|** Matlab **|** MS Office/Excel **|** SQL **|** json | Git/Github **|** Supervised Machine Learning **|** Signal Processing **|** Image Processing **|** Dimensionality Reduction | scikit learn | pandas | matplotlib | NLP | API | Design of Experiments | Instrument Automation

PATENTS

No. 8497499 - A method to modify the conductivity of graphene. Inventors: Dragomir Davidovic, Walter A. de Heer, Christopher E. Malec

No. 9276197 - A method of detecting Domain Walls in a nano magnet **|** Inventors: Mark B. Johnson, Christopher E. Malec

WORK EXPERIENCE

Science Writer: Journal of Visualized Experiments (JoVE) - remote (2018-present) | Wrote scripts, storyboards, and analysis workflows to be turned into instructional videos for introductory college physics labs.

Physics Faculty: Bard High School Early College - Baltimore (2015-2018) **| Classes taught:** College Physics: Mechanics, Freshman Physics: Motion and Waves, College Physics: Modern Physics, Chinese Society and Technology, Geometry

Engineering Instructor: Johns Hopkins - Frederick, MD (Summer of 2017-2019 **|** Delivered the Johns Hopkins Engineering Innovation class, to talented high school students at the Hood College Campus.

Post-doctoral Researcher: Naval Research Laboratory (Public Trust Clearance) - Washington, D.C. (2012 - 2015) **|** Researched fabrication, measurement, and analysis of novel Domain Wall based memory devices.

Graduate Teaching/Research Assistant: Georgia Institute of Technology - Atlanta, GA (2005 - 2011) **|** Conducted research into graphene devices as well as single nano-particle based tunneling devices.

Selected Projects & Publications

Word Prediction Algorithm An NLP algorithm with UI built in R shiny. I used an n-gram model to look up the most probable next word given the prior one to three words. Data supplied by SwiftKey.

Am I doing this exercise right? A model made from observations of motion tracking devices. I used several algorithms (including random forest and gradient boosting) to classify movements into correct execution or one of several error modes..

Analysis of PBC data An analysis of a study into Primary Biliary Cirrhosis, including hypothesis tests and data visualization.

Student Outcomes (in progress) Publicly available data used to predict high school dropout with an unbalanced logistic regression model.

Anisotropic Magnetoresistance Dominant in a Three Terminal Hanle Measurement 2016, *Applied Physics Letters*, **C. E. Malec**, Michael M. Miller, Mark B. Johnson **|** A device using the spin of electrons is fabricated. We test the new three terminal Hanle technique.

Transport in Graphene Tunnel Junctions 2011, *Journal of Applied Physics*, **C. E. Malec**, Dragomir Davidovic **|** Measurement and modeling of tunnel junctions made from a single graphite layer and Al or Cu.