Jeffrey Walker

Curriculum Vitae

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Citizen of The United States
Authorized to work in The Netherlands

Education

August 2008 – May 2015
Doctor of Philosophy, *West Virginia University* .
Concentration in Plasma Physics

August 2005 – August 2008
Masters of Science, *West Virginia University*.
Concentration in Plasma Physics

August 2001 – May 2005
Bachelor of Science, *Canisius College*.
Major in Physics, Minor in Mathematics

Work Experience

September 2018 – August 2019
Data Scientist, *Jugaad Analytics*, Amsterdam, North Holland, Netherlands.
Developed predictive maintenance solutions for clients using a hybrid machine learning and engineering approach
- Analysed raw data sets from Royal IHC to determine how to find value in their data
- Built and deployed custom, scalable database integration and machine learning algorithm in PYTHON to forecast dredge pump efficiency for Royal IHC
- Forecasted dredge pump efficiency with a mean absolute percent error less than 5% between prediction and out-of-sample data

June 2015 – June 2017
Post-Doctoral Researcher with Jasper Halekas, *University of Iowa*, Iowa City, IA, USA.
Analysed and presented data from NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE) and ARTEMIS missions.
- Demonstrated that Energetic Neutral Atoms (ENAs) are the best candidate to explain why the mystery source of current in the Lunar Dust Experiment (LDEX) is highly correlated with solar wind flux, having a correlation coefficient of 0.72
- Discovered signatures of 3 Lunar Magnetic Anomalies in LDEX time series data when they are in LDEX field of view, another unexpected but fortuitous result that supports ENAs as the best candidate to explain the mystery current source

May 2007 – May 2015	**Graduate Research Assistant for Mark Koepke**, *West Virginia University*, Morgantown, WV, USA.

Developed simulation codes and analytical models for dust grains with time-dependent charge in plasma
- Developed a symplectic, single particle simulation code in MATLAB to study dust grain transport due to non-stationary charging effects, including an innovative iterative leapfrog scheme to treat non-linear drag on dust grains
- Developed an intuitive analytical theory to describe how dust grains move in an abrupt plasma inhomgeneity
- Predicted grain trajectories for the Auburn Magnetized Dusty Plasma experiment using my simulation and analytical theory

August 2005 – May 2015	**Teaching Assitant for Greg Puskar**, *West Virginia University*, Morgantown, WV, USA.

Responsible for establishing, teaching, and grading undergraduate physics laboratory courses for 100 students each semester
- Provided constructive feedback on assignments
- Helped my students develop critical thinking skills and problem solving techniques
- Illustrated how physics concepts and equations apply to their world through relatable examples

Skills

Numerical Methods for Differential Equations, MATLAB, OCTAVE, LaTeX, Finite-Differencing Techniques, Particle-In-Cell codes, Machine Learning, Statistical Analysis, SQL, PYTHON, BASH and Shell Programming, C, C++, FORTRAN, Linux, Mac OSX, Microsoft Windows, OpenOffice, Microsoft Office, IDL

Hobbies and Interests

- Guitar
- Chess
- Celestial Navigation
- Hamilton-Jacobi Mechanics
- Linguistics
- Cello
- Boardgames
- Geography
- Economics
- History