Michael Sussman, Ph.D.

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Summary

Data Scientist specializing in A/B testing and statistical modeling, turning complex systems of mathematical equations into efficient, high-quality code. Large-scale climate simulation and pattern recognition experience, developing novel algorithms for high-level analysis over myriad data sources. Extensive experience with corporate and biotech software development.

Experience

2015 – Present **Senior Data Scientist**
Groupon, *Chicago, IL*

Advanced statistical methods for A/B testing and user experience analytics. Prototyping group sequential testing theory, Monte Carlo simulations, Markov chain prediction, and multivariate analysis in Python and Hive/SQL within an Agile environment. Statistical education and seminars for product and marketing managers.

2012 – 2014 **Postdoctoral Research Associate**
Lunar & Planetary Laboratory, *Tucson, AZ*

Development of supercomputer climate models of planets with high obliquity using Fortran, simultaneously integrating large sets of partial differential equations in massively parallel framework. High-level statistical analysis algorithms for resulting simulations in Matlab to derive flux divergence.

2011 – 2012 **Postdoctoral Research Associate**
University of Louisville Physics & Astronomy Department, *Louisville, KY*

Development of large-scale giant planet climate simulations in C using supercomputing MPI clusters. Synthesis of novel analysis techniques for ground-based data sets in C and IDL to derive stratospheric planetary wave amplitudes using Bayesian Fourier Transforms. Generation of elliptical PDE solver for massive matrices to produce velocity streamfunctions.

2004 – 2011 **Graduate Research Assistant**
New Mexico State University, *Las Cruces, NM*

Extension of climate simulations to include original radiative transfer routines written in C, optimizing published algorithms from $O(n^2)$ to $O(n)$. Original analysis techniques of spacecraft data in C and IDL for pattern recognition in giant planetary atmospheres. Spectroscopic observations with research-class telescopes at multiple observatories.

2002 – 2004 **Research Analyst**
MIICRO, Inc, *Chicago, IL*

Inferential statistical analysis methods including Principal Component Analysis for neurological data. Pioneered novel normalization technique with linear algebra transforms and cost functions in Matlab. Generated and maintained Python code to parse clinical data.

2001 – 2002 **Quality Assurance and Technical Support Engineer**
CollabNet, *Chicago, IL*

Establishment of QA process for a network of developers creating code collaboration tool. Black-box testing in Python.

1998 – 2001 **Quality Assurance Engineer**
Inso Corporation, *Chicago, IL*

Test execution of commercial software over multiple platforms. Functional and stress testing, for in-house white-box test applications in C.

Education

2007 – 2011 **Ph.D. In Astronomy**, New Mexico State University

Thesis: *Modeling Seasonal Change on Uranus with the EPIC GCM*

2004 – 2007 **M.S. In Astronomy**, New Mexico State University

Specialization in Planetary Atmospheres, GPA: 3.92

1994 – 1998 **B.A. In the Natural Sciences with Distinction**, Shimer College

Hutchins Great Books Curriculum, GPA: 3.33

Patents

2016 ***Methods and Systems for Programmatic Control of Transmitted Electronic Content***

2015 ***Method, Apparatus, and Computer Program Product for Predicting Web Browsing Behaviors of Consumers***

Skills

Data Science A/B Testing, Advanced Statistics (Frequentist and Bayesian), Group sequential analysis, Markov Chain prediction, Monte Carlo simulation, Regression analysis

Mathematics & Physics Vector calculus, Differential equations, Linear algebra, Fourier transforms, Theoretical and observational astrophysics, Fluid mechanics, Newtonian and quantum physics, Optics and detectors, Radiative transfer, Thermodynamics

Programming Python (Numpy, Scipy, Matplotlib), C, SQL/Hive, Fortran, IDL, Matlab

Example A/B Testing training can be found here: https://youtu.be/Auu9AnCozWQ?t=141

References, publications, and salary history provided upon request.