

Max G. Kresch, Ph.D.

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WORK
EXPERIENCE

Independent Consultant

Illumyx: Data Science, 2020 –

Illumyx uses historical and survey data to analyze corporate culture for their clients.

- Determined statistically significant factors affecting employee satisfaction before and after company acquisitions.
- Quantified high turnover rate using survival analysis. Employed linear/logistic regression analysis to investigate driving factors.

Oculogica: Data Science, 2020 –

Oculogica produces the EyeBOX, which aids in diagnosis of concussion.

- Performed analysis for camera-equivalence study demonstrating current and new EyeBOX cameras were equivalent within FDA-approved confidence bounds.
- Developed machine learning based concussion detection algorithm and performed paired subject analyses of algorithm performance.
- Investigated effects of camera noise on concussion detection results.

Jasper Guitar Company: Science/Math, 2018 –

Jasper Guitar Company builds guitars with patented technology that allows musician control of sustain, harmonic overtones, and feedback.

- Contributed to provisional patent application
- Provided estimates of resonance for new model guitars

University of Wisconsin

The University of Wisconsin offers a Master of Science in Data Science through online coursework and projects.

Lecturer, Data Science Program, 2017 – 2019

- [DS 700: Foundations of data science](#)
- [DS 710: Programming for data science](#)
- [DS 745: Visualization and Unstructured Data Analysis.](#)

Marft Inc., San Francisco, California

Marft provides machine learning as a service to professionals with little or no computer, math, or machine learning expertise.

Tools and systems engineer, 2013 –

- Designed and developed an account management system, data transport system, and automated test suites.
- Trained and managed a junior programmer.
- Led cross-team integration of the client applications with the account management and data transport systems.

Institute for Defense Analyses (IDA), Alexandria, Virginia

The Operational Evaluation Division at IDA provides technical advice on how to test and interpret the results of tests of federal government systems and purchases. Their findings influence the decisions of high level officials in the departments of Defense and Homeland Security.

Consultant, Operational Evaluation Division, 2013 – 2018

Research Staff Member, Operational Evaluation Division, 2009 – 2013

- Managed and oversaw teams of analysts testing and evaluating government computer systems in their operational environments.
- Analyzed and interpreted test plans and results. Recommended courses of action (buy/don't buy, deploy or not, repair/upgrade before deployment, etc.) to high level government decision makers.
- Established a lab for computer security education and research.

EDUCATION **Ph.D., M.S., California Institute of Technology**, Pasadena, California, 2002 – 2009
Ph.D., **Materials Science**, June 2009
Area of Research: Solid-state Physics / Materials Science
Thesis Topic: **Temperature Dependence of Phonons in Elemental Cubic Metals**
M.S., **Materials Science**, June 2004.

University of Wisconsin, Oshkosh & Fox Valley, 1999 – 2002
Courses in Physics, Computer Science, Mathematics, & Chemistry;
Area of Research: Surface Physics

B.A., Pomona College, Claremont, California, 1995 – 1999
B.A., **French**, May 1999.
Area of Research: French Philosophy and Literature
Thesis Topic: The Maxims of Francois Duc de la Rochefoucauld

Honors

Author or coauthor of over 20 articles, presentations, and posters. ([Partial list here.](#))
Lansce Neutron Scattering School at Los Alamos National Laboratory, 2004.
National School on Neutron and X-ray Scattering at Argonne National Laboratory, 2003.
W.C. Clark Fellowship, California Institute of Technology, 2002.
Freshman Chemistry Achievement Award, University of Wisconsin, Oshkosh, 2000-2001.
Study abroad at the Sorbonne in Paris, 1998.

TECHNICAL SKILLS

Computers

Programming:
• Analytics (Python, NumPy, pandas, SciPy, scikit-learn, LightGBM, R)
• Plotting (Matplotlib, Gnuplot, Seaborn, R, Excel)
• Applications (Python, C, C++).
• Scripting and automation (Python, Shell, UNIX utilities, Lua, Perl, PHP, Ruby).
• Mathematics (Matlab, Maple, Mathematica, Maxima)
• Publishing (L^AT_EX, HTML).
• Other (JavaScript, Visual Basic, Java, MySQL, x86 assembly).
Cloud computing with integration and automation:
• AWS and boto including EC2, S3, and Cloudfront.
• Azure and azure.js including virtual machines.
Distributed computing administration including small Beowulf and Hadoop clusters.
Linux system administration.

Science/Materials

Neutron and X-ray diffraction, scattering, and spectroscopy.
Computer simulations of materials:
• Molecular dynamics (GULP, PHON).
• Density functional theory calculations (Wien2k, VASP).
Arcmelting, arcwelding, general materials processing.

OTHER SKILLS Languages: Fluent in French, speak conversational Hebrew.
Teaching: Taught guitar and tutored physics.
Music: Play guitar in local bands.
Sports: Regularly play ultimate disc, cross-country ski, weightlift, . . .