Zhiwei Chang

Data/Research Scientist

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Curious and persistent researcher with over 10 years of experience in theoretical and numerical (bio)physics ready to transfer to new role as Data Scientist. I love to enter new territories, acquire new knowledge and skills to solve the most challenging problems ahead. Being sceptic and imaginative both — with a can-do-it-all, grit and teamwork mentality — I am equipped to make unique contributions to the team.

SKILLS

Programming & Software

Python, Numpy, Pandas, Matplotlib, Seaborn, Jupyter Notebook, Scikit-learn, SQL, MATLAB/Octave, Mathematica, Git, Linux shell, Office, LaTeX

Technical

Regression (Linear, Multiple-Linear, Logistic, Polynomial, SVR, Random Forest) , **Classification** (K-NN, SVM, Random Forest, Native Bayes), **Clustering** (K-means, Hierarchical), **Deep learning**, Project Management, Data Cleaning & Interpretation, Scientific writing & documentation

EXPERIENCE

2021.7 – CURRENT

To deep my understanding in machine learning and also benefit others, I began to rewrite Andrew Ng's course exercises Matlab code in Python. Moreover, I implement corresponding algorithms in Scikit-learn as a comparison and some problems are solved using different methods. I also explore and analyze the data sets in Kaggle. In addition, I solve algorithms and data structure problems in AlgoExpert. These projects can be found in my Github.

2018.5 – 2021.6

Massachusetts Institute of Technology
Postdoc Fellow/Independent Researcher

This position is mainly focused on measuring protein structures using solid-state nuclear magnetic resonance (NMR). During the COVID when MIT was closed, I developed a new physical theory to analyze/design the electromagnetic pulses used to manipulate protein nuclear spins. This independent work resulted two manuscripts which are now ready for submission. I also took the famous machine learning course by Andrew Ng on Coursera during this period.

2011.9 – 2017.7

Lund University
Ph. D Researcher

I switched to a more interdisciplinary area - biophysics, to do my PhD. Using protein and water proton as a probe, working closely with my supervisor, I derived quantum mechanical theories related to NMR and wrote corresponding simulation packages to study protein dynamics. This work resulted in 5 first-authorship papers in a well-known peer-reviewed journal.

2008.9 – 2011.7

Northwest Normal University
Master Student

As my thesis project, I was tasked with calculating the atomic structure of the "superheavy" element 117 and its lighter homologue Astatine. With very little supervision, I published 5 theoretical and simulation papers and some of my predictions have been cited and confirmed by CERN.

EDUCATION

2018.5 – 2021.7 **Postdoctoral Researcher**
Biophysical Chemistry
Massachusetts Institute of Technology, USA

2011.9 – 2017.7 **Doctor of Philosophy**
Biophysical Chemistry
Lund University, Sweden

2008.9 – 2011.7 **Master of Science**
Theoretical Physics
Northwest Normal University, China

2003.9 – 2007.7 **Bachelor of Science**
Theoretical Physics
Beijing Normal University, China

SCHOLARSHIPS & AWARDS

2018 **3-year International Postdoc Grant (3.15 million SEK, Approval Rate: 15%)**
Swedish Research Council (Vetenskapsrådet)

2013 **Hakon Hanssons Travel Grant (15000 SEK)**
Lund University

2011 **Full Ph.D. Scholarship**
Lund University

2010 **"Outstanding Paper" Award**
Northwest Normal University

LANGUAGES

MOTHER TONGUE Chinese
FLUENT English
ELEMENTARY Swedish

TEACHING

Two semesters as a teaching assistant tutoring Thermodynamics and Electromagnetism; three semesters as a lab instructor tutoring several Thermodynamics experiments.

PUBLICATIONS

Twelve manuscripts: two submitted, ten published (peer-reviewed), ten first-author, including *J. Chem. Phys.*, *J. Phys. Chem. A*, etc. Some key publications can be found in my Google scholar (zwchang@mit.edu).