TAO HONG, Ph.D.

Address: 6455 Bollinger RD. Cupertino, CA 95014. Cell: (858) 837-0805. Email: taohong01@gmail.com

Data Scientist / Advanced Computer Vision Engineer with 8+ years of experience in machine learning and programming seeking opportunities to create innovative technologies and products

SUMMARY OF QUALIFICATIONS

- Expert knowledge in computer vision, machine learning and navigation algorithms, such as, feature detection, image registration, colorimetry, linear regression, SVM, PCA, K-means, Kalman filters, Convolution Neural Network, Deep learning.
- Proficiency in advanced analysis tools and programming languages, Python (openCV, pandas, matplotlib, scikit-learn, etc.), Matlab, and experience with C and C++.
- Familiar with SQL, Spark and Hadoop and AWS cloud computing systems.
- 10+ years of working experience with signal processing, image processing, information retrieval and pattern recognition and system automation for variety of applications, such as, advanced navigation sensor research, encrypted communication, medical imaging, semiconductor manufacture and metrology equipments.
- Enormous hardware and robotic system design and integration experience, familiar with variety of sensors, actuators and lasers and design software, such as, Zemax, Solidworks.,
- Demonstrated self-directed research ability and advanced problem-solving skills.
- Strong curiosity and high adaptability to anything new, tools, environments, challenges.
- Experienced in leading projects, working with cross-functional teams to tackle challenges.

PROFESSIONAL EXPERIENCE:

AOSense, Inc •Sunnyvale, CA (2013-Present)
Senior Physicist- Intelligent Navigation Algorithm and Software Development

- Leading scientist working on cutting-edge navigation system development for aero-space applications. Responsible for algorithm and software development for numerical simulation, machine learning and navigation application. Working with Python and C++.
- Guidance sensor system design and integration for strategic-grade launch vehicles.
- Machine learning consulting for Saathi Health Inc. Machine learning architecture and algorithm development for cardiovascular disease prevention and related financial analysis.

Gamma Scientific, Inc•San Diego, CA (2012-2013)
Senior System Engineer

- System modeling and algorithm design lead. Contributed to the development of automated product metrology and classification systems for Apple Inc. Abstracted and quantified the computation of the metrology process, developed pattern recognition and statistical learning algorithms, worked with software engineers in the algorithm implementation, validation and testing. Coordinated Customers in product quality control analysis, helped with the application of machine training and statistical analysis and successfully identified root-cause of defects. Using Python, C++ and C#.

Cymer, Inc•San Diego, CA (2011-2012)
Principal Engineer

- Leading engineer, responsible for bridging up engineering teams and multiple disciplinary experts and scientists in the development of intelligent EUV image analysis system. Designed algorithm for image processing, pattern recognition, statistical analysis and modeling, using Python and OpenCV.

Chinese Academy of Sciences • SIOM • SARI • Shanghai, China (2009-2011)
CAS 100-Talent Principal Research Scientist,

- Led a team and researched on quantum statistics, quantum navigation sensors and application.
- Collaborated with Washington University at St. Louis Medical Imaging Laboratory on quantum photo-acoustic imaging, developing algorithm and software for medical image pattern recognition using image registration, k-nearest neighbor, k-means, SVMs, etc.

Joint Quantum Institute • Harvard University • University of Washington (2003-2009)
Senior Research Associate in Computational and Statistical Physics

- Led research on atomic navigation sensors and developed information adiabatic retrieval theory.
- Contributed to navigation sensor system development for Draper Laboratories and developed software for image processing and experimental data analysis, using PCA, ICA, k-means, SVM, linear regression, etc. for interference information extraction.
- Designed novel algorithms and developed software for optical spectrum classification and pattern recognition, using Matlab, C and C++.
- Optical imaging system and robotic system design and integration.

Nippon Telegraph & Telephone Co. • JSPS, Japan (1999-2003)
Computational Physicist and JSPS Fellowship

- Led the research on real time chaotic pattern recognition and control for communication encryption and decryption, programming with Matlab, C and C++.
- Researched on quantum dynamics, similar to Boltzmann Machines for Deep Learning and developed algorithm and programs based Markov Chain and Monte Carlo for simulation.
- Worked on optical image and signal processing using nonlinear regression and k-means etc. for image segmentation and compression.

AWARDS & HONORS:

- Daheng Prize for Excellent Thesis, Chinese Academy of Sciences (1999)
- JSPS Foreign Researcher Fellowship, Japan Society for the Promotion of Science (1999)
- First Rank in the Heilongjiang University Mathematics Competition (1991)
- Invited Journal Reviewers for American Optical Society (2004-Present)

PUBLICATIONS:

- 30+ peer-review papers (3 Physical Review Letters) in academic journals and conferences.

EDUCATION & DEGREES:

- Chinese Academy of Sciences • Shanghai, China. (1999)
  Doctor of Philosophy in Optical Physics, (Researched on Computational Physics, focused on Quantum Statistics and Nonlinear Dynamics of photons and atoms)
- Harbin Institute of Technology • Haribin, China (1996)
  Master of Science, (Researched on Optical Nonlinear Dynamics and Image Processing, Image Registration and Pattern Recognition, Programming in C, C++ and Matlab)
- Heilongjiang University • Haribin, China (1993)
  Bachelor of Science, Physics, (Numerical Simulation of Artificial Neuron Network)

Coursework: Numerical Analysis, Machine Learning, Fourier Optics and Image Processing.