CHENLONG **WANG**

Data Scientist | Machine Learning | Algorithm Engineer

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SUMMARY

5 years of hands-on experience in building solution for a wide variety of challenging problem in industry to enable growth and impact via algorithm.

PROJECT EXPERIENCE

✦ ***SAIC Motor Artificial Intelligence Laboratory*** — ***Shanghai (China) July 2017 –- Now (2+ years)***

Data Scientist
Match 2019 –- Now

- DATA-DRIVEN-SOLUTION ECOSYSTEM FOR EVCARD CAR-SHARING SERVICE

  This project aims to providing a data-driven solution for a car-sharing company. It utilizes plenty of machine learning algorithms to forecast consumer's potential consumption and usage based on the historical operation data. Further more, this can be used to dispatch vehicles in advance in order to satisfy the customers location preference.

Machine Learning Algorithm Engineer
Nov 2018 –- April 2019

- SPEAKER RECOGNITION SYSTEM FOR SAIC MOTOR

  This project with the purpose to verify person's identity based on his/her voice records. It is implemented through several traditional acoustic and machine learning algorithms to extract the bionic features (Mel-Frequency Cepstral Coefficients) , apply factorization analysis, and classify person's identity.

Algorithm Engineer
June 2018 –- Sep 2018

- INTELLIGENT SCHEDULING SYSTEM FOR JAGUAR & LAND ROVER (CHINA)

  This project aims to provide a transportation schedule system for vehicle parts logistics. It is an extension of the previous project SPRUCE which is designed for the VOLKSWAGEN (CHINA).

Algorithm Engineer
Nov 2018 –- April 2019

- CITY EXPRESS SCHEDULING SYSTEM FOR ANJI NON-STANDARD BUSINESS

  This project aims to construct a business pattern for ANJI city express business from the algorithm optimization perspective during the whole project process. The topics include urban distribution center selection, load pooling, vehicle assignment, real-time scheduling, route optimization. This can help the company to save the operation cost and increase the profits.

Algorithm Engineer
Aug. 2017 –- Feb. 2018

- INTELLIGENT SCHEDULING SYSTEM (SPRUCE) FOR VOLKSWAGEN (CHINA)

  This project is designed for automatically providing a transportation schedule for automotive parts logistics. The system includes parts packing, load pooling, vehicle route optimization and vehicle assignment modules. This system is used by the Volkswagen (CHINA) to generate daily transportation schedule efficiently and effectively. This can help the company to save the logistics cost and advance delicacy management.

✦ ***Kaggle*** — ***Shanghai (China), Match. 2019 –- Now (6 months)***

Data Scientist
June. 2019 –- Aug. 2019

- GOLDEN MEDAL SOLUTION FOR PREDICTING MOLECULAR PROPERTIES

  This project aims to utilize machine learning methods to make a prediction at a molecule level. It applies graph neural network to solve this problem with physical-designed features. We also applied several ensemble methods to increase the performance of models.

✦ ***KAUST / Tongji*** — ***Thuwal (Saudi Arabia) / Shanghai (China) , Dec. 2015 –- Jan. 2017 (1 year)***

Algorithm Engineer
Dec. 2015 –- Jan. 2017

- MEDIA PARAMETER OPTIMIZATION ALGORITHM DEVELOPMENT FOR KAUST

  This project aims to provide an algorithm for estimating media parameters from geo sensor data. It iteratively estimate the media parameters based on the 2-norm objective function by the l-bfgs algorithm. It includes numerically solve the boundary condition of the corresponding partial differential equation and provided a data decoupling method. It can provide a physical-explainable solution for the multi-parameter optimization problem.

✦ ***NTNU / Statoil*** — ***Trondheim (Norway), Dec. 2014 –- Dec.2015 (1 year)***

Algorithm Engineer
Dec. 2014 –- Dec. 2015

- DATA ASSIMILATION ALGORITHM DEVELOPMENT FOR NTNU

  This project is designed for solving a nonlinear optimization problem with equational constrain. It transform the original optimization problem into another domain to relieve the non-linearity of the objective function. It includes deriving the gradient of a self-designed objective function based on the Lagrange multiplier method and numerically implemented the solution with high performance computing cluster in C programming. It provides a better initial guess for the further optimization.

EDUCATION

Tongji University, Ph.D in Geophysics — ***Sep. 2011 –- May 2017***

Norwegian University of Science and Technology, Guest Ph.D. in Applied Physics — ***Aug. 2014 –- Dec. 2015***

Tongji University, Bachelor in Geophysics — ***Sep. 2007 –- Aug. 2011***

PUBLICATIONS

✦ *2019*

Wang C.L., Cheng J.B., Weibull W.W. and Arntsen B. Elastic wave equation migration velocity analysis preconditioned through mode decoupling. Geophysics doi: 10.1190/geo2018-0181.1

✦ *2018*

Wang T.F., Cheng J.B., Guo Q. and Wang C.L. Elastic wave-equation-based reflection kernel analysis and traveltime inversion using wave mode decomposition. Geophysical Journal International, 215(1), 450–470, doi: https://doi.org/10.1093/gji/ggy291

✦ *2016*

Wang C.L., Cheng J.B., and Arntsen B. Scalar and vector imaging based on wave mode decoupling for elastic reverse time migration in isotropic and TI media. Geophysics, 81(5), S383-S398, doi :10.1190/GEO2015-0704.1

Yu P.F., Geng J.H., and Wang C.L..Separating quasi-P-wave in transversely isotropic media with a vertical symmetry axis by synthesized pressure applied to ocean-bottom seismic data elastic reverse time migration. Geophysics, 81(6) C295-C307, doi :10.1190/geo2016-0108.1

Yu P.F., Geng J.H., Li X.B. and Wang C.L. Acoustic-elastic coupled equation for ocean bottom seismic data elastic reverse time migration. Geophysics, 81(5), S333-S345, doi :10.1190/geo2015-0535.1

Cheng J.B., Alkhalifah T., Wu Z.D., Zou P. and Wang C.L.. Simulating pro- pagation of decoupled elastic waves using low-rank approximate mixed-domain integral operators for anisotropic media. Geophysics, 81(2), T63–T77, doi :10.1190/geo20150184.1

✦ *2013*

Wang C.L., Cheng J.B., Yin C. and Liu H. Microseismic events location of surface and borehole observation with reverse time focusing using interferometry technique. Chinese J. of Geophys,56(9) :3184-3196, doi :10.6038/cjg20130931

✦ *2012*

Cheng J.B., Wang T.F., Wang C.L., and Geng J.H. Azimuth-preserved local angle-domain prestack time migration in isotropic, vertical transversely iso- tropic and azimuthally anisotropic media. Geophysics, 77(2), S51–S64.doi : 10.1190/geo2011-0295.1

CONFLUENCE PAPER

✦ *2017*

Wang C.L., Cheng J.B., Weibull W.W. and Arntsen B. Analysis of converted- wave extended images for shear velocity estimation with wave mode decoupling, 87th SEG Technical Program Expanded Abstracts, Houston, United States.

Wang T.F., Cheng J.B., Guo Q. and Wang C.L., Elastic wave equation reflection traveltime inversion using dynamic warping and wave mode decomposition. 79th EAGE Conference and Exhibition, Paris, France.

Wang C.L., Cheng J.B., P/S separation of multi-component seismogram recorded in anisotropic media. 79th EAGE Conference and Exhibition, Paris, France.

Wang C.L., Weibull W.W., Cheng J.B., and Arntsen B., Automatic shear-wave velocity analysis with elastic reverse time migration. 79th EAGE Conference and Exhibition, Paris, France.

Wang C.L., Cheng J.B., and Weibull W.W., 3D vector imaging of converted waves for fractured reservoirs. 79th EAGE Conference and Exhibition, Paris, France.

✦ *2015*

Wang C.L., Cheng J.B., and Arntsen B. Imaging condition for converted waves based on decoupled elastic wave modes. 85th SEG Technical Program Expanded Abstracts, New Orleans, United States.

Wang T.F. Cheng J.B. and Wang C.L.. Elastic wave mode decoupling for full waveform inversion. 77th EAGE Conference and Exhibition, Madrid, Spain.

Wang C.L. Cheng J.B. and Arntsen B. Numerical pure wave source implementation and its application to elastic reverse time migration in anisotropic media. 77th EAGE Conference and Exhibition, Madrid, Spain.

✦ ***2014***

Wang C.L. Cheng J.B. and Wang T.F. Local angle domain elastic reverse time migration in TI media. 76th EAGE Conference and Exhibition, Amsterdam, The Netherlands.

Wang C.L. Cheng J.B. and Wang T.F. Local angle domain elastic reverse time migration in anisotropic media. SPG/SEG International Geophysical Conference, Beijing, China.

✦ ***2012***

Wang C.L., Cheng J.B., and Kang W. Separating wave-modes of prestack elastic seismograms using pure mode wave propagators in anisotropic media. 83rd SEG Technical Program Expanded Abstracts, Las Vegas, United States.

✦ ***2011***

Wang C.L. Cheng J.B. Micro-seismic events location using reverse time method with interferometric imaging condition. SPG/SEG International Geophysical Conference, Shenzhen, China.

WORKSHOP INVERTED REPORT

✦ ***2017***

Cheng J.B., Wang T.F. and Wang C.L. Mode decomposition-based precondi- tioning for elastic wave equation reflection traveltime inversion and migration velocity analysis. 3rd SEG workshop in full waveform inversion, Manama, Bahrain.

✦ ***2016***

Cheng J.B., Wang C.L. Vector imaging of the decomposed elastic wave modes for 3d heterogeneous ti media. 17th International Workshop on Seismic Anisotropy, Austin, United States

✦ ***2015***

Wang C.L. Cheng J.B. and Arntsen B. Propagating decomposed elastic wave- fields by first- and second-order wave equations using low-rank k-space method for isotropic media. Lofoten Seminar. Svalbard, Norway

Cheng J.B., Wang C.L. and Wang T.F. Elastic wave mode decoupling for seis- mic imaging and inversion. The workshop of APSWLIM, Prage, Czech Republic