Marc Kjerland, PhD

Chicago, IL
☎ +1 612-443-4025
✉ marc.kjerland@gmail.com
(pronounced "chair"land)

Skills

- Machine learning & deep learning
- Numerical & statistical modeling
- High-performance computing
- Nonlinear dynamics and chaos
- Algorithm development
- Data-driven insights

Experience

2022 – Present **KeyBank**, *Sr Quantitative Analysis*, Model Risk.
- Machine learning model valiation for fraud applications
- Reviewing vendor models for appropriate data/ML methodology within risk tolerance

2019 – 2022 **Bank of America**, *VP (Senior Data Scientist)*, Global Markets.
- Developed machine learning framework for market forecasting and reporting
- Built reinforcement learning model for hedging application using custom Keras neural network and compute layers
- Developed interpretable multi-label classifier to reduce human workload in securities compliance
- Created automation library for model documentation integrating API calls and LaTeX templates
- Derived evolving PCA methodology for robust covariance matrix estimation from noisy market data

2018 – 2019 **Verisk Analytics**, *Data Scientist*, Insurance Analytics.
- Headed a personal lines modeling project with six data scientists, from data processing to model iteration to detailed documentation
- Built countrywide and state-specific models with data-driven recommendations for product owners
- Delivered rigorous technical presentations to stakeholders with model improvement of 40–80%

2017, 2014–2015 **University of Illinois at Chicago**, *Postdoctoral Fellow*, Institute for Environmental Science and Policy.
- Developed novel non-parametric performance metrics for urban sustainability
- Published results and methodology using linear optimization and time series analysis

2015 – 2017 **Kyoto University**, *Postdoctoral Researcher*, Disaster Prevention Research Inst.
- Developed open-source module for large multiscale storm surge simulations using complex meteorological data
- Quantified hazard impacts of changing typhoon distributions in Pacific Ocean using Monte Carlo simulation

Education

2015 **PhD, Applied Mathematics**, *University of Illinois at Chicago.*
Thesis: Linear response closure approximations for multiscale systems

2005 **B.S., Mathematics**, *University of Minnesota, Twin Cities.*

Technical skills

Computing languages: Python, SAS, C/C++, Fortran, Matlab/Octave, SQL

Python packages: pandas, numpy, scipy, scikit-learn (sklearn), matplotlib, seaborn, keras, tensorflow, h2o, jupyter, etc

Natural languages: English, French, German, Japanese

Other: Excel, LaTeX, Bash, GitHub, QGIS, JSON, web scraping

Research Papers

2020 **(In progress)**, *Storm surge modeling and impact analysis for historical storms in the Caribbean.*

2019 **Journal of Cleaner Production**, *Sustainability Assessment of Universities as Small-Scale Urban Systems: A Comparative Analysis Using Fisher Information and Data Envelopment Analysis. Vol 212.*

2017 **Proceedings of Coastal Dynamics 2017**, *Estimating climate change impacts on storm surge using adaptive mesh refinement.*

2016 **Hydrological Research Letters**, *Impact assessment of climate change on coastal hazards in Japan. Vol 10.*

2016 **Communications in Mathematical Sciences**, *The response of reduced models of multiscale dynamics to small external perturbations. Vol 14, No 3.*