Marc Kjerland, PhD

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(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 Associate*, Model Risk Management
- Validating AI/ML models used in fraud detection, credit risk, and marketing
- Evaluating models for data treatment, conceptual soundness, and performance

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, Javascript, SQL

Natural languages: English, French, German, Japanese

Other: Office suite, LaTeX, Bash, Git, QGIS, JSON

Research Papers

2023 **(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*