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

Marc Kjerland, PhD

Skills

- Machine learning & predictive modeling Nonlinear & multiscale dynamics
- Data-driven insights
- \circ Algorithm development
- High-performance computing

- Technical writing

Experience

2022 – Present KeyBank, Senior Quantitative Associate, Model Risk Management

- Performing rigorous validation of predictive models to ensure robustness, accuracy, and compliance
- Mitigating potential financial, reputational, and emerging risks via detail-driven monitoring & controls
- Overseeing models in fraud detection, credit & market risk, and operations
- Providing leadership for junior validators in technical review and stakeholder communication

2019 – 2022 Bank of America, VP (Senior Data Scientist), Global Markets

- Developed & deployed ML framework (Python) for market forecasting and reporting
- Built reinforcement learning model for hedging application; custom Keras / Tensor-Flow 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
 - Headed model development project with six data scientists, from data processing to model iteration to detailed documentation
 - Built countrywide and state-specific pricing models with data-driven recommendations for product owners
 - Delivered rigorous technical presentations to stakeholders with model improvement of 40–80%
 - 2017, University of Illinois at Chicago, Postdoctoral Fellow, Institute for Environmental
 - 2014–2015 Science and Policy
 - Developed novel non-parametric evaluation metrics for urban sustainability
 - Published research paper for methodology combining time series analysis and linear optimization
- 2015 2017 Kyoto University, Postdoctoral Researcher, Disaster Prevention Research Inst.
 - Quantified hazard impacts of typhoon flooding in Pacific Ocean coastlines using Monte Carlo simulation

 $_{\odot}$ Developed open-source module for large multiscale storm surge simulations using complex meteorological data

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 Natural languages: English, French, Japanese, German Other: Office suite, LATEX, SQL, 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