

Albert Chua

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PROFESSIONAL EXPERIENCE

Risk/Data Analytics Associate

10/2023 – Present

Global Atlantic Financial Group

New York, NY

- Refactored daily reporting pipeline and implemented automated reporting system for sidecar investments, reducing runtime by 80% and saving 3 days of manual labor per quarter.
- Sped up firm's MOWQLN optimizer for training LASSO models, reducing training costs from \$9000 to \$6000 per model.
- Trained and deployed Mutli-Adaptive Regression Spline + LASSO model using hundreds of AWS nodes concurrently in a large shared code base to monitor liquidity risk for approx \$35bn in assets.

Risk/Data Analytics Intern

06/2023 – 08/2023

Global Atlantic Financial Group

New York, NY

- Migrated legacy reporting pipeline (10k lines of code) from SAS to Python, eliminating two days of manual labor per month.
- Created LASSO model to monitor a variable annuity of \$20mm in assets w/ high liquidity risk, relative error in surrenders decreased by 33%.
- Built a causal tree via EconML to quantify the effects of COVID and interest rate increases on partial withdrawals.

Data Scientist Intern

06/2022 – 09/2022

Amazon, B2B Payments

Seattle, WA

- Queried clickstream and payment data in SQL to feature engineer features for a B2B payment fraud dataset.
- Used dataset to create a scalable tree-based model for the payment fraud detection pipeline, leading to a \$20mm reduction in fraud losses.
- Implemented a prototype unsupervised clustering algorithm for fraud profiling via K-means and Independent Component Analysis.

EDUCATION

Michigan State University

East Lansing, MI

PhD in Mathematics, GPA: 3.94/4.0

2018 – 2023

- PhD Dissertation: [On the Wavelet Scattering Transform and its Generalizations](#)

Missouri University of Science and Technology

Rolla, MO

BS in Physics/Applied Mathematics, BA in Economics, GPA: 3.97/4.0

2014 – 2018

PUBLICATIONS AND PREPRINTS

- **Albert Chua**. "[Towards Time-Frequency Deformation Stability Bounds for Deep Convolutional Neural Networks](#)." Accepted to ICASSP 2025.
- **Albert Chua**, Yang Yang. "[Generalizing Geometric Nonwindowed Scattering Transforms on Compact Riemannian Manifolds](#)." *Sampl. Theory Signal Process. Data Anal.* 22, 19 (2024).
- **Albert Chua**, Matthew Hirn, Anna Little, [On Generalizations of the Nonwindowed Scattering Transform](#), *Applied and Computational Harmonic Analysis*, Volume 68, 2024, 101597, ISSN 1063-5203.
- Liping Yin, **Albert Chua**. "[Long Range Constraints for Neural Texture Synthesis Using Sliced Wasserstein Loss](#)." arXiv preprint, arxiv:2211.11137.

PERSONAL PROJECTS AND CODE SAMPLES

[Deep Decoder w/ TV layers](#) | *PyTorch, NumPy*

- Unsupervised denoising of images by exploiting the implicit bias of a random decoder w/ learned Total Variation layers.
- Proposed method showed improved contrast/image quality compared to baseline methods with comparable run time.

[Wavelet Pyramid in Parallel](#) | *C++, OpenMP, MPI*

- Created a serial and parallel implementation of a wavelet pyramid with parallelized matrix operations.
- Parallelized via OpenMP/MPI, *speeding up the algorithm multiple times* compared to a baseline serial implementation.

TECHNICAL SKILLS

Languages: Python, C/C++, SQL, MATLAB

Libraries/Dev Tools: Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, PyTorch, Redshift, Sagemaker, OpenMP, MPI, Git, SLURM, Linux