Josef Sajonz

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EDUCATION

University of Chicago — **Chicago, IL**
M.S. in Computational and Applied Mathematics — *Sep 2024 – June 2026*
- **Current Coursework:** Matrix Computation (Numerical Linear Algebra), Time-Dependent Data, Fast Analysis-Based Algorithms

University of Michigan — **Ann Arbor, MI**
B.S. in Honors Mathematics; Minors in Statistics, Computer Science, German Studies — *Aug 2020 – May 2024*
- **Cumulative GPA:** 3.7/4.0 · **Honors & Awards:** LSA Honors Program, University Honors (4x), Kothe-Hildner Prize
- **Relevant Coursework:** Machine Learning, Data Structures & Algorithms, Intermediate Differential Equations, Honors Calculus III & Linear Algebra, Theoretical Statistics, Micro/Macroeconomics · **Graduate Level:** Statistical Regression, Probability Theory, Stochastic Processes, Complex Analysis, Fluid Dynamics, Monte Carlo Methods
- **Activities & Jobs:** Math Circle Volunteer, Math Lab Tutor (Probability, Linear algebra, ODEs), Teaching Assistant (Calculus III)

PROFESSIONAL EXPERIENCE

Morgan Stanley — **Alpharetta, GA**
Technology Summer Analyst — *Jun 2024 – Aug 2024*
- Used Python (Django) and SQL to create a self-service page for employees to manage their E*Trade accounts and data
- Implemented multi-threading to optimize the filtering process as the page searches through millions of data points
- Worked in close proximity to the data center, improving systems for low-latency data access to keep databases running continuously

Morgan Stanley — **Alpharetta, GA**
Technology Summer Analyst — *Jun 2023 – Aug 2023*
- Used SQL & PowerBI to analyze large datasets given by the Wealth Management department to identify key prospective client metrics
- Developed an automated data analysis, commentary, and visualization platform using Matplotlib and the OpenAI API in Python

Nitrility, Inc. — **Remote**
Co-Founder and Chief of Strategy and Research — *Nov 2021 – Present*
- Developed website www.nitrility.com using ReactJS and programmed the world's first intellectual property (IP) marketplace using Python, with currently 2,000+ monthly visits to our website and 35,000+ followers across various media platforms
- Raised $375k+ from venture capitalists and personally mentored 15+ employees including graphic designers, developers, and interns

RESEARCH EXPERIENCE

University of Michigan, Lab of Geometry at Michigan (LogM) — **Ann Arbor, MI**
Undergraduate Researcher advised by Dr. Ruby Kim — *Jan 2023 – Apr 2023*
- Used MATLAB with GitLab version control to develop and analyze nonlinear ordinary differential equation models of circadian rhythms to explore how they are affected by mRNA transcription rates and external day-light cycles
- Presented results in poster session to 50+ people at the end of the semester (Poster)

California Institute of Technology, Department of Computing + Mathematical Sciences — **Remote**
Undergraduate Researcher advised by Dr. Ricardo Baptista — *Jun 2022 – Jul 2023*
- Co-authored Machine Learning paper on normalizing flows, a generative method for estimating and simulating conditional probability distributions, applicable in sophisticated financial modeling, risk assessment, and portfolio optimization
- Developed input-convex neural networks with PyTorch to analyze the impact of dimensionality and sample size on normalizing flows

PUBLICATIONS

A generative flow model for conditional sampling via optimal transport
With Jason Alfonso, Ricardo Baptista, Anupam Bhakta, Noam Gal, Alfin Hou, Isa Lyubimova, Daniel Pocklington, Ryan Tsai, Giulio Trigila
- Accepted to the Conference on Neural Information Processing Systems (NeurIPS) Optimal Transport & Machine Learning Workshop
- PDF | ArXiv:2307.04102 | NeurIPS Official | Google Scholar (2023)

EXTRACURRICULAR EXPERIENCE

United States Tennis Association — **United States**
National Tennis Player — *Jun 2013 – Mar 2020*
- Top 10 ranking in New Jersey and top 250 nationally, with D3 offers from University of Rochester and Johns Hopkins University
- Travelled all over the country and trained for 20 hours per week for upcoming competitions, winning 30+ national and regional awards

SKILLS & INTERESTS

- **Software & Tools:** Python (PyTorch, Pandas, Numpy, SciPy, Matplotlib), C++, R (RStudio, Tidyr, Ggplot2), Java, SQL, Excel, MATLAB, Swift, PowerBI, Tableau, Excel, Git, DataIQ
- **Interests:** Tennis, Billiards & Pool, Snooker, Basketball, Chess, Poker, Orchestra, App Development, Mid-Distance Running, Reading
- **Languages:** English (native), German (proficient), Chinese (proficient), Polish (elementary)