

ANDERSON MISOBUCHI

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📍 Austin, TX - United States

EXPERIENCE

Graduate Researcher - UT Austin

Weinberg Theory Group

📅 August 2016 – Present 📍 Austin, TX

- Research on the connection between quantum information and quantum gravity via a conjectured duality
- Experience with numerical simulations on supercomputer

Teaching Assistant / Instructor - UT Austin

📅 August 2016 – Present 📍 Austin, TX

- Lab experiments, discussion sections, grading, office hours for various undergraduate physics courses
- 1 year as instructor of record for Physical Science 304

ACHIEVEMENTS

- 6 articles published in top journals of the field
- 8+ Poster and oral presentations in respected conferences
- Graduate Continuing Fellowship Award (2020)

TECHNICAL SKILLS

- **Python** – NumPy, Pandas, Scikit-Learn, TensorFlow, Keras
- **Machine Learning** – Regression, Random forests, Ensembling, CNN, RNN, Clustering
- Mathematica, Matlab, SQL, LaTeX, git

PERSONAL SKILLS

- Initiative to solve problems
- Logical thinking
- Verbal and written communication
- Comfortable working independently

CERTIFICATIONS

Machine Learning (Coursera)

Deep Learning Specialization (Coursera)

EDUCATION

PhD in Physics

University of Texas at Austin

📅 Expected 2022

MS in Physics

University of São Paulo

📅 2016

BA in Physics

University of São Paulo

📅 2014

Coursework:

Calculus I-IV, Linear Algebra I&II, Probability and Statistics, Stochastic Methods, Complexity theory, Foundations of Data Science

PROJECTS

Sparse SYK Model (Github)

- Simulated a sparse version of the SYK model, a many-body quantum system of great interest in quantum gravity.
- Used MPI parallelization and Krylov subspace techniques on the Texas Advanced Computing Center (TACC).
- Achieved current largest scale simulation of the system with 40 particles.

Tensor Networks (Github)

- Investigated applications of *tensor networks* (a framework to simulate quantum systems of many particles) to both supervised and unsupervised machine learning algorithms.
- Created tutorials about tensor networks aimed at non-physicists using the python library TensorNetwork.
- Compared performance of tensor networks to a basic neural network.

Quantum chaos (Ongoing)

- Diagnosing quantum chaotic properties in the sparse SYK model.
- Built prototypes and conducted benchmarks to scale up the simulation.
- Submitted proposal to use TACC Frontera resources as a co-PI.