

# José Vinícius de Miranda Cardoso

keywords: optimization, machine learning, software development,  
quantitative research

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## Education

*PhD Student in Electronic and Computer Engineering*  
**The Hong Kong University of Science and Technology**, Hong Kong  
*Topic:* Graphs in financial markets  
*CGA:* 3.74/4.3

*Fall 2019 – Spring 2023 (expected)*

*B.Eng. in Electrical Engineering*  
**Federal University of Campina Grande**, Brazil

*Class of 2019*

*Visiting Student – Electrical Engineering and Computer Science*  
**The Catholic University of America**, USA  
**University of Maryland at College Park**, USA  
Brazil Scientific Mobility Program, Fully funded scholarship recipient

*Fall 2014 – Spring 2015*

## Professional Experience

*Teaching Assistant*  
**The Hong Kong University of Science and Technology**, Hong Kong  
*Courses:* Data-driven Portfolio Optimization, Convex Optimization, Portfolio Optimization with R

*Feb 2020 – Current*

*Research Scientist Intern*  
**Shell Street Labs, BFAM Partners**, Hong Kong  
Development and research in FX portfolio optimization and equity market regime identification for the systematic strategies team.

*Summer 2021*

*Scientific Software Engineering Intern*  
**National Aeronautics and Space Administration, Ames Research Center**, Silicon Valley, CA, USA  
Kepler/K2 Guest Observer Office  
Developed open source Python code to assist scientists get the most out of NASA Kepler/K2/TESS time series data.

*Mar 2017 – Feb 2018*

*Google Summer of Code Student*  
**The AstroPy Project**  
Project title: Point spread function photometry for fitting overlapping stars simultaneously  
Developed open source Python code to fit Gaussian mixture models to stellar images.

*Summer 2016*

*Undergraduate Guest Researcher*  
**National Institute of Standards and Technology**, USA  
Center for Nanoscale Science and Technology  
Nanofabrication Research Group  
Developed MATLAB code to automatically localize nanoemitters in optical microscopy images.

*Summer 2015*

## Volunteering Experience

*Deputy AstroPy Google Summer of Code Coordinator*  
Deputy coordinator for the AstroPy project in the Google Summer of Code program  
Organizing the AstroPy efforts towards participating in the Google Summer of Code.

*Fall 2019 – Current*

*Google Summer of Code Mentor and Organization Administrator*  
Admin and mentor for the OpenAstronomy organization during the Google Summer of Code  
Managing the OpenAstronomy efforts towards participating in the Google Summer of Code.

*Summer 2018 – Current*

## Project Proposals

### NASA Transiting Exoplanet Survey Satellite Proposal

2019

Uniform Light Curves Across the Entire Sky from TESS FFIs with ELEANOR

Principal Investigators: Dr. Benjamin Montet (University of Chicago) and Dr. Jacob Bean (University of Chicago)

### NASA Transiting Exoplanet Survey Satellite Proposal

2018

Performing The Most Comprehensive Exoplanet Survey Of The Southern Sky With TESS Full Frame Images

Principal Investigator: Dr. Benjamin Montet (University of Chicago)

## Selected Publications

Google Scholar profile <https://scholar.google.com/citations?user=ilvNpCoAAAAJ&hl=en>.

1. Wang, X, Ying, J, **Cardoso, JVM**, and Palomar, DP. Efficient Algorithms for General Isotone Optimization. *The Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI)*, Feb. 2022. Acceptance rate: 15.0%.
2. **Cardoso, JVM**, Ying J, Palomar, DP. Graphical Models in Heavy-Tailed Markets. *Advances in Neural Information Processing Systems (NeurIPS)*, Dec. 2021. Acceptance rate: 26.0%.
3. Ying, J, **Cardoso, JVM**, Palomar, DP. Minimax Estimation of Laplacian Constrained Precision Matrices. *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Apr. 2021. Acceptance rate: 29.8%.
4. Ying, J, **Cardoso, JVM**, Palomar, DP. Nonconvex Sparse Graph Learning under Laplacian-structured Graphical Model. *Advances in Neural Information Processing Systems (NeurIPS)*, Dec. 2020. Acceptance rate: 20.1%.
5. **Cardoso, JVM**, Palomar, DP. Learning undirected graphs in financial markets, *54th Asilomar Conference on Signals, Systems, and Computers*, Sept. 2020.
6. Kumar, S, Ying, J, **Cardoso, JVM**, Palomar, DP. A unified framework for structured graph learning via spectral constraints. *Journal of Machine Learning Research (JMLR)*, Jan. 2020.
7. Kumar, S, Ying, J, **Cardoso, JVM**, Palomar, DP. Structured graph learning via Laplacian spectral constraints. *Advances in Neural Information Processing Systems (NeurIPS)*, Dec. 2019. Acceptance rate: 21.6%.
8. Price-Whelan, AM, *et. al.* The Astropy Project: Building an open-science project and status of the v2.0 Core Package, *The Astronomical Journal* 156, 2018.
9. Davanco, MI, Liu, J, Sapienza, L, Zhang, CZ, **Cardoso, JVM**, Verma, V, Mirin, R, Nam, SW, Srinivasan, K. Heterogeneous integration for on-chip quantum photonic circuits with single quantum dot devices. *Nature Communications*, 2017.

## Awards

1. Full travel funding to attend the workshop *Preparing for TESS*, Flatiron Institute, New York City, USA, 2018
2. Selected to the workshop *Python in Astronomy*, Leiden, The Netherlands, 2017
3. Selected, with full travel funding, to the São Paulo School of Advanced Science on Nanophotonics, São Paulo, Brazil, 2016
4. Travel Grant (US\$ 2000,00) by the Institute of Electronic and Electrical Engineers to attend the IEEE APS Meeting 2016

## Competencies

**Coding:** Python, R, C/C++, git/GitHub, Unix shell, unit tests, continuous integration/development

**Courses:** Convex Optimization, Stochastic Processes, Deep Learning Architectures, Topological and Geometric Data Analysis

## Open-source Projects on GitHub

- ▷ spectralGraphTopology: learning graphs from data (40+ stars on GitHub)
- ▷ riskParityPortfolio: design of risk parity portfolios in R (60+ stars on GitHub)
- ▷ riskparity.py: optimization of risk parity portfolios in Python (160+ stars on GitHub)