

# José Vinícius de Miranda Cardoso

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

jvdmc@connect.ust.hk  
<https://mirca.github.io>  
phone: +852 5444 9062  
GitHub: @mirca

## Education

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

*Fall 2019 – Spring 2023 (expected)*

*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*

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

*Class of 2019*

## 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  
Developed Python tools to perform 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

1. **Cardoso, JVM**, Ying J, Palomar, DP. Graphical Models in Heavy-Tailed Markets. *Advances in Neural Information Processing Systems (NeurIPS)*, Sept. 2021. Acceptance rate: 26%.
2. 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%.
3. Ying, J, **Cardoso, JVM**, Palomar, DP. Nonconvex Sparse Graph Learning under Laplacian-structured Graphical Model. *Advances in Neural Information Processing Systems (NeurIPS)*, Sept. 2020. Acceptance rate: 20.1%.
4. **Cardoso, JVM**, Palomar, DP. Learning undirected graphs in financial markets, *54th Asilomar Conference on Signals, Systems, and Computers*, Sept. 2020.
5. 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.
6. 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%.
7. **Lightkurve Collaboration**, et. al. Lightkurve: Kepler and TESS time series analysis in Python. *Astrophysics Source Code Library*, 2018.
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.

For a complete list of my publications, please refer to my Google Scholar profile <https://scholar.google.com/citations?user=ilvNpCoAAAAJ&hl=en>.

## 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

## Personal Projects

- ▷ 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)