Alexander Quispe

MSc. Quantitative Economics · LMU Munich
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Education

Harvard University — *Boston, MA*
M.A.(c) Computer Science — *2023 - Present*
- **Courses:** Introduction to AI, Computer science with Java II

Massachusetts Institute of Technology — *Boston, MA*
Visiting Student, Applied Economics Group — *2019 - 2020*
- **Host:** Prof. Claudia Steinwender
- **Phd Courses:** Learning, Nonlinear Econometrics, Inference on Causal and Structural Parameters Using ML and AI, Labor Economics I, Labor Economics II

Ludwig Maximilian University of Munich — *Munich, Germany*
MSc. QUANTITATIVE ECONOMICS - **PhD Track** — *2018 - 2020*
- **Advisors**: Prof. Dietmar Harhoff and Uwe Sunde
- **Phd Courses**: Advanced Panel Data Methods, Econometric Methods to Estimate Causal Effects, Big Data and Machine Learning, Probability and Mathematical Statistics, Advanced Microeconomics and Macroeconomics

Pontificia Universidad Católica Del Perú — *Lima, Peru*
BS Economics — *2013 - 2017*
- GPA 4 - Magna cum laude
- **Graduate Courses:** Panel and Cross Section Econometrics, Advanced Mathematics, Game Theory

Visiting Position

2019-2020 **Visiting Scholar at Harvard University**, Laboratory for Innovation Science. **Host Prof. Karim R. Lakhani**

Experience

The World Bank — *Washintong DC*
ID4D, G2Px, The Digital Economy for Africa Initiative — *2020-Present*
- **Creation of Raster Indicators: Using Satellite Data, GHS, Earth Engine Data Catalog, Google Research-Open Buildings and Planetary Computer.**
- **Creation of OSRM Python package** to calculate driving distance in real time for free.
- **Creation of EconMentor: AI Tool integrated with GPT-4 which creates research questions using Economics Research Papers**
- **Creation of DigitalPillarAI : AI Tool integrated with GPT-4 for Semantic Analysis and Classification of PROJECT APPRAISAL DOCUMENTS**
- **Led a "Causal Machine Learning" course** for over fifty researchers, covering causal trees and causal forests algorithms using Uber's CausalML library, and introducing attendees to statistical analysis in Python.
- **Conducted an impact evaluation of the Benazir Income Support Program (BISP) in Pakistan**, utilizing the econometric difference-in-differences method, geolocation tools, and data visualization techniques to assess the effects of biometric verification on beneficiary empowerment and satisfaction.
- Analyzed access to identification offices in seven countries, including Uganda, Sudan, Ethiopia, Nigeria, Angola, Bolivia, and Ecuador, employing **raster analysis, parallel computing, Machine Learning, and Big Data** in R to determine average travel time to ID offices and the proportion of the population residing in "deserts" – areas beyond certain travel time thresholds.

MIT Sloan School of Management — *Cambridge, MA*
Research Associate — *2019-2020*
- Collaborated with Professor Claudia Steinwender to study **the impact of communication time reduction on cotton textile product imports in the 19th century**, discovering the crucial role of product codifiability and its largest effect on the most codifiable product, yarn.
- I performed several **Quantile, Poisson, and IV Poisson regressions** and proposed bias correction methods for gravity models.
- **Investigated the containerization process in the United States during the 20th century**, utilizing geocoded data and the International Comprehensive Ocean-Atmosphere Data Set to analyze the reduction of commercial ship unloading times from approximately 13 days in 1950 to 5 days in 1975.

Max Planck Institute for Innovation and Competition — *Munich, Germany*
Research Assistant — *2018-2019*
- Developed an algorithm using **Google Directions API to calculate commuting times** between residence and workplace municipalities for inventors by train, car, or bicycle in Python.
- Conducted nonparametric regressions to estimate the probability of inventors staying in a district after tax increases and used **Amazon Web Services for parallel computing** to calculate confidence intervals with Bootstrap in R.

Deptartment of Economics LMU Munich — *Munich, Germany*
Research Assistant — *2018-2019*
- Studied the impact of multigrade classes on labor market outcomes, leveraging **Regression Discontinuity Design (RDD) and geocoded school data** to estimate the causal effect of different policies on people living near state borders, concluding that states with single-grade classes were preferable.
- In my master's econometrics project, I re-examined the Baskaran and Hessami (2018) study using **lasso/ridge regression and RDD**, finding a stronger causal effect of female mayors on the advancement of female council candidates in Germany.

Deptartment of Economics Yale University *New Heaven, CT*

Research Assistant *2016-2018*

- Worked with Ph.D. Max Perez Leon, estimating the effectiveness of cash bonuses for retaining public teachers in remote locations in Peru from 2015-2018 using RDD.
- Created a comprehensive database on teacher migration by gathering data from 200 local educational management units, and developed a **fuzzy matching algorithm using the Levenshtein distance** to merge migration data with a Ministry of Education roster of four million teachers.
- Leveraged **Yale's Grace cluster for high-performance computing** to expedite data matching, analyze teacher migration patterns, and identify areas with teacher surpluses or shortages using Python's Folium library.

Statistical software and Open Source

ILLA - AI-trained virtual assistant skilled in identifying potential obstetric and gynecological violence-**Media**.

DigitalPillarAI - AI tool integrated with GPT4 engine to classify Project Appraisal Documents from the World Bank into six pillars.

llm4tesis - AI tool integrated with GPT4 engine to create research questions from the thesis repository in the Department of Economics PUCP.

csdid - Contains tools for computing average treatment effect parameters in a Difference-in-Differences including Double Robust Estimation.

osrm.py - Python package to calculate driving distances for free using OSRM engine

synthdid.py & **Synthdid.jl** - Python and Julia implementation of Synthetic difference in differences method based on Athey et al. (2021)

HDMJL.jl - Julia Package of methods for estimation in high-dimensional models based on Chernozhukov et al. (2016)

Sensemakr.jl - Julia package for sensitivity analysis tools based on Cinelli et al. (2020)

D2CML My website focuses on Causal Machine Learning, simplifying concepts and providing code examples in R, Python, and Julia.

CMLViz.py Python version of Stata Visual Library from DIME Analytics

Working Papers

Impact of the Availability of Chat-GPT on Software Development: A Synthetic Difference-in-Differences Estimation using GitHub Data

High Dimensional Metrics in Julia with V. Chernozhukov, C. Hansen and M. Splinder.

Estimating Heterogeneous Effects of Cash Bonuses in Teacher Retention with Machine Learning: Evidence from Peru with S. Zhang and R. Tang.

Fertility and Education Patterns Across Different Phases of Development - Master Thesis.

Books

V. Chernozhukov and A. Quispe (2021). Inference on Causal and Structural Parameters using ML and AI with R, Python and Julia, used in the course 14.38 at MIT.

A. Quispe (2022). Machine Learning and Causal Inference using Python, used in the course MGTECON-634 at Stanford.

Awards, Fellowships, & Grants

2021	**Award for Excellence in Teaching**, PUCP	
2020	**Emergency Grant** , LMU Munich	*€ 500*
2019	**PROSA-LMU Stipendium** , DAAD to conduct research at Harvard University	*€ 2,300*
2017-2018	**DAAD Kontakt Stipendium**, German Academic Exchange Service	*€ 1,400*
2017	**Student Exchange Scholarship**, PUCP, to study in Germany	*$ 5,000*
2012-2016	**Full Scholarship for academic excellence in five consecutive years**, PUCP	

Teaching Experience

2022	**Causal Trees and Causal Forest Workshop using Python**, Lecturer	*World Bank*
2021-2022	**Machine Learning and Causal Inference using R, Python and Julia**, Lecturer	*PUCP*
Fall 2018	**Advanced Econometrics**, Lecturer	*UNMSM*
2018	**Advanced Econometrics, Macroeconomics 1, Advanced Microeconomics** , TA	*PUCP*
2016-2017	**Advanced Microeconomics, Advanced Macroeconomics**, TA	*PUCP*

Skills

Programming: Python, Java, Julia, R, Stata-Mata, C++, Matlab, Git, Linux, HTML

Frameworks: OPENAI-API, Cloud Computing Azure, AWS EC2, PyTorch, TensorFlow, Apache Spark, MySQL, PostgreSQL

References

1. Prof. Victor Chernozhukov, Department of Economics & Center for Statistics, MIT, USA. Email: vchern@mit.edu, Phone: (617) 253-4767
2. Prof. Dietmar Harhoff. Director of the Max Planck Institute for Innovation and Competition. Email: dietmar.harhoff@ip.mpg.de, Phone: +49 89 24246-550.
3. Julia Clarck, Senior Economist-The World Bank. Email: jclark6@worldbank.org, Phone:+012024732651.