Mahdi Mir

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EDUCATION

Master's in Theoretical Economics, *TeIAS, Tehran, Iran* 2019 – 2022

- Full-tuition **scholarship** with a stipend for graduate studies.
  One of 16 awardees **nationwide.**
- Thesis: "Do Iranian mutual funds follow momentum or anti-momentum strategies?"
  Supervised by Mahdi Heidari.
- GPA: 4

B.Sc. in Electrical Engineering, *Sharif University of Technology, Tehran.* 2013 – 2019

- **Ranked $\mathbf{162^{nd}}$** in nationwide university entrance examination for Bachelor programs among more than $\mathbf{250K}$ participants.
- Thesis: "How to design an efficient solar energy production system?"
  Supervised by Ali Abbaspour (**MIT** & **Berkeley** Alumni).

COMPUTER SKILLS

Programming Languages

- **STATA**, *Professional level*
  - Estimation of different econometrics models, like fixed Effect, Logit & probit, ordinary OLS & etc.
  - High-Dimensional fixed effect models, with thousands of categories using **REGHDF** package.
  - Various data visualization practices.
  - Implementiation of time series regression models.
  - Worked with Large Scale Datasets. e.g. HAN 2022, REGPAT 2022 and Orbis.
- **Python**, *Professional level*
  - Expreience in **layout parsing** of the financial statements images using the ***TableNet*** **deep learning model.**
  - Good experience in **image processing** and **OCR**, using the Google Tesseract engine, for Persian language.
  - Deep experience in textual analysis, working with texts & regular expressions.
  - Quantitative analysis in finance.
  - Data mining and data crawling from the internet HTML pages.
  - Various data cleaning/gathering projects using Pandas, etc.
  - Various interactive **data visualization** and statistical analysis.
  - Designed a pattern match checking system for tables (2-D data).
  - Deep experience in **multiprocessing** & **asynchronous** processing to speed-up projects.
- **R**, *Uppper-Intermediate level*
  - Calculation of **PDF** and **CDF** functions numerically.
  - Multivarite **regression** and **time series** analysis.
  - Implementation of **Monte Carlo** simulations.
  - Implementation of **Markov Chain Monte Carlo** algorithms.
  - Estimation of **non-linear** regression models.
- **Julia**, *Intermediate level*
  - Dynamic programming, finding value functions quantitatively.
  - Quantitative analysis in the labor field.
  - Implementing McCall job search model and its succeeding models.
  - Various data visualization practices.
  - Done several comparative statistical analyses in the context of labor search models.
- **Visual Basic**, *Intermediate level*
  - Mostly coding in Excel.
- **C, C++**, *Basic level*
  - Done some basic projects.
- **Bash**, *Intermediate level*
  - Database upgrade automation in Linux environment.

Others

- **MySQL**, *Intermediate level*
  - Worked with standard and global databases like **Zepyhr**, **Orbis**, **OECD PATENTS**, the ***Bocconi*** university **PATENTS-ICRIOS** database, etc.
- **MATLAB, Octave**, *Preofessional level*
  - Mostly working with matrices, quantitative simulation & analyses
- **Dynare**, *Intermediate level*

- Simulation of DSGE models.

- **LaTeX, Beamer**, *Professional level*
- **MS Excel, Word, PowerPoint**, *Professional level*
- **Linux (Ubuntu)**, *Upper-Intermediate level*
- **Windows**, *Advanced level*
- **Mac OS**, *Advanced level*

RESEARCH EXPERIENCES & COMPUTER PROJECTS

Graduate Economics Student, *TeIAS* 2019 – 2022

- Data extraction from the mutual funds' reports' images about their holdings, using image processing methods, **Google Tesseract** engine and the ***TableNet* deep learning model.** As a part of my Master's thesis data gathering.
- Data crawling of the Iranian firms' monthly revenue from HTML & also scanned images.
- Replication of the paper Jegadeesh, Titman (1993), "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency", with Iran's stocks market data. Supervised by Mahdi Heidari.
- Done several back-testing of trading strategies using the **Zipline** open source backtesting library, and **AlphaLens engine.** in Python.
- Done some adjustments in the source code of **Zipline** for backtesting of momentum strategies with Iran's market historical data.
- Replication of the paper Ng, Wu (2007), "The trading behavior of institutions and individuals in Chinese equity markets", with Iran's stocks market data. Supervised by Mahdi Heidari.
- Implementing McCall search & other related models with Julia. Supervised by Hossein Joshaghani.
- Worked with Macroeconomics databases, gathered & cleaned Iran's risk-free rate, exchange rates, gold prices and some more.

Others

- Authority & Innovation, ***Hamed Davari, University of Mannheim, Germany.*** Jul 2022
  - Worked with **Zepyhr** Database, the Comprehensive M&A data with integrated detailed company information, from Bureau van Dijk, A Moody's Analytics Company
  - Worked with **Orbis** database, a growing database of companies and other entities, from Bureau van Dijk, A Moody's Analytics Company
  - Worked with OECD Patent datasets
  - Worked with PATENTS-ICRIOS DATABASE, from the Bocconi university, Italy
- Iran's listed firms' employment details, ***Javad Shamsi, LSE, UK.*** Sep 2022
  - Gathered a dataset of industry and subindustry of listed firms, and their matching with standard **ISIC** codes version 4.
  - Worked on adjusted/not adjusted prices of listed firms.

RESEARCH ASSISTANT

- Mahdi Heidari, ***TeIAS, 30 months*** 2020 – 2022
- Hamed Davari, ***University of Mannheim, Germany, 4 months*** Summer 2022
- Javad Shamsi, ***Starting Sep 2022, Ongoing*** 2022

TEACHING ASSISTANT

TeIAS

- Fintech, ***Amin Shams, Fisher College of Business, OSU, USA.*** 2022
- Macroeconomics I, *Hosein Joshagahni* 2021
- Microeconomics I, *Sepehr Ekbatani* 2020

Sharif University of Technology

- Electrical Engineering Principles 2017

OTHER PROFESSIONAL ACTIVITIES

- Head Manager of Economic/Financial Databases, *TeIAS* 2021 – 2022
- Corporate Governance Reading Group, *TeIAS* 2021

AWARDS, HONORS & SCHOLARSHIPS

- **Full-tuition *scholarship*** with a stipend for graduate studies, 2019
  for the **Master's of Theoretical Economics**, TeIAS, **One of 16** awardees **nationwide.**
- **Ranked 79^{th}** in the nationwide university entrance examination for the Master's in Economics. 2019
- **Ranked 162^{nd}** in nationwide university entrance examination for Bachelor programs 2013
  among more than $250K$ participants.
- Accpeted in the first stage of national **Mathematics olympiad** 2012

LITRETAURE REVIEW

- Corporate Governance: A Brief Review of the Litretaure 2020

WORKING PAPERS

- "Do Iranian mutual funds follow momentum or anti-momentum strategies?" with Mahdi Heidari.
- "Good News, Bad News About Iranian Listed Firms, the First Dataset in Iran." with Mahdi Heidari.

LANGUAGES

English, Upper-intermediate level
Persian, Native, Fluent

RELEVANT GRADUATE COURSES

Macroeconomics II, *Hosein Joshaghani, TeIAS* — Fall 2021
- Contents: Fiscal Multiplier & Identification in Macro, Dynamic Optimization, Bellamn Equation, Continuous-Time Search Models, Discrete-Time search models, Consumption, Investment, Financial Markets.
- Grade: A

Topics in Macro, Labor Market & Search, *Alireza Sepah-Salari (**University of Bristol**)* — Spring 2021
- Dynamic Programming, Bellman Equation, general equilibrium models with incomplete financial markets, Huggett (1993), Aiyagari (1994), heterogeneous agents models.

Financial Economics II, *Farshad HaghPanah, TeIAS* — Fall 2020
- Investment Management & Corporate Finance, Asset Pricing, Market Microstructure
- Grade: A^-

Microeconomics II, Game Theory, *Mahdi Fadaei, TeIAS* — Fall 2020
- Strategic-Form Games, Mixed Strategies, Continuous Games, Bayesian Games, Extensive-Form Games, Perfect-Bayesian Equilibrium, Repeated Games.
- Grade: A

Macroeconomics I, *Hosein Joshaghani, TeIAS* — Spring 2020
- Solow growth model, Neo-Classical Growth Model, Endogenous Growth Model, Real Bussiness Cycle Theory, Nominal Rigidity, DSGE Models
- Grade: A^-

Econometrics II, *Muhamad Hoseini, TeIAS* — Spring 2020
- Causality, Regression, Maximum Likelihood Estimation, GMM, Binary Response Models, Selection Bias & Experiments, IV, DID, Regression Discountinuity.
- Grade: A

Financial Economics I, *Mahdi Heidari, TeIAS* — Fall 2019
- Time Value of Money, Corporate Valuation Models, Modern Portfolio Theory, Capital Asset Pricing Model (CAPM), Efficient Market Hypothesis, Introduction to Derivatives.
- Grade: A

Econometrics I, *Layla Shiva, TeIAS* — Fall 2019
- Simple Regression, Multiple Regression, Inferences, Dummy Variable, IV, Two Stage Leaset Squares, Simultaneous Equations Models.
- Grade: A

Mathematics For Economics, *Erfan Salavati, TeIAS* — Fall 2019
- Matrices, Linear Algebra, Concave & Convex Functions, Constraind & Un-Constrained Optimization, Kuhn-Tucker Theorem.
- Grade: A^-

Microeconomics I, *Muhamad Morovati, TeIAS* — Fall 2019
- Choice Theory, Classical Demand Theory, Aggreagate Demand, Production, Uncertaintity, General Equilibrium Theory.
- Grade: A^-

Macroeconomics, *Morteza Zamanian, GSME at Sharif University of Technology* — Spring 2019
- Bonds Market, The IS-LM Model, The AS-AD Model, The Phillips Curve.
- Grade: A

SUMMER SCHOOLS & SHORT-TERM STUDIES

- **2^{nd} International Trade**, *Summer School, TeIAS* — 2019
- **Data Science**, *Winter School, TeIAS* — 2020
- **Theoretical Aspects of Data Science and Machine Learning**, *Summer School, TeIAS* — 2022

HOBBIES

- Swimming, Professional Level, life-saving Certificate, from ISAF, Iran Ministry of Sports & Youth.