SAYEDMORTEZA MALAEKEH

Curriculum VITÆ, Decemeber 2024

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Education

University of Texas at Austin

2023–Present **Ph.D. Student in Sustainable Systems Engineering with Minor in Energy Studies**.

2023–Present **Joint M.Sc. Student in Economics, Department of Economics**.

Sharif University of Technology

2019–2022 **M.Sc. Water Resources Engineering**, Highest Distinction (Class Rank: 1st/23).
Graduate Thesis Title (Excellent A+): "A spatio-temporal analysis of climate variability and its economic impacts on agriculture in Iran", Advisors: Prof. A. Safaie & Prof. L. Shiva.

2015-2019 **B.Sc., Civil Engineering with Minor in Economics**, Highest Distinction (Class Rank: 7th/72) .

Visiting Positions

Summer 2024 **Visiting Ph.D. Researcher (Special Student) at the Department of Economics**, *California Institute of Technology*, hosted and funded by Prof. Hannah Druckenmiller.

Spring 2021 **Visiting M.Sc. Student (Exchange Program) at the Department of Applied Mathematics**, *Saint Petersburg State University*.

Research Interest

Primary: Causal Machine Learning, Environmental and Energy Economics

Secondary: Public Economics, Household Finance, Industrial Organization

Publications

Working Papers/Work in Progress

In Progress The Impact of Solar PV Adoption on Household Financial Health, *with Sergio Castellanos, Gallen Barbose, & Erik O'Shaughnessy.*

In Progress A Multimodal Causal Framework for Large-Scale Ecosystem Valuation: Application to Wetland Benefits for Flood Mitigation, *with Hannah Druckenmiller, Connor Jerzack, & Georgia Gkioxari.* [Draft Available Upon Request] Presented at AGU 2024 & NeurIPS Workshop 2024 (Link to NeurIPS Presentation)

Working Paper The Heterogeneous Role of Initial Seeds in Solar PV Diffusion Patterns by Race and Ethnicity, *with Sergio Castellanos.* [Draft Available Upon Request] Presented at AGU 2023 & Macro Energy Systems 2024

Peer-reviewed Published Papers

1st-Author [3] **Malaekeh, S.**, Shiva, L., Safaie, A. (2024) Investigation of the economic impact of climate change on agriculture in Iran: spatial spillovers matter, *Agricultural Economics*, 55 (6), pp.433-453. https://doi.org/10.1111/agec.12821. Presented at EGU 2022 & SWELL 2023, (Replication Data and Methods).

Co-Author [2] **Danesh-e-Yazdi, M.**, Malaekeh, S. (2023) Investigating water resources and agricultural economy in the Mahabad study area (located in the southern part of Lake Urmia) by hydro-economic modeling, *Iran-Water Resources Research*, 19(2), pp. 87-105..

1st-Author [1] **Malaekeh, S.**, Safaie, A., Shiva, L., Tabari, H. (2022). Spatio-temporal variation of hydro-climatic variables and extreme indices over Iran based on reanalysis data, *Stochastic Environmental Research and Risk Assessment*, 36, pp. 3725–3752. https://doi.org/10.1007/s00477-022-02223-0. Presented at EGU 2021 .

Technical Reports

Co-Author **Bayati, M.**, Malaekeh, S., Azimi, F., Danesh-e-Yazdi, M. Monitoring agricultural land-use change by combining remote sensing and machine learning algorithms over Miandoab regions, Iran, *Sharif Remote Sensing Research Center*, October 2019.

Accomplishments & Awards

2024 ***Grad Camp Fellowship ($750)***, Berkeley/Sloan Summer School in Environmental and Energy Economics

2024 ***Travel Grant ($505)***, Macro Energy Systems, Princeton University

2023-2024 ***Research PhD Fellowship***, Lawrence Berkeley National Laboratory

2015–2022 ***Winner of Educational Awards***, Iran's National Elite Foundation

Jan 2020 ***Exchange Program Scholarship ($2000)***, International Affairs Office, Sharif University of Technology

Sep 2019 ***Exceptional Talented Student Title*** and Exempted from the M.Sc. Program Entrance Exam

Aug 2019 ***Ranked 9th/10000 (99.9% Percentile)*** in Iranian National **Economics Olympiad** for University Students

June 2018 ***Distinguished Student Award***, Department of Civil Engineering, Sharif University of Technology

Apr 2018 ***First-place*** Outstanding Research Recognition Award (Bachelor's Thesis), Lake Urmia Restoration Program

Sep 2015 ***Ranked 272nd/181846 (99.9% percentile)*** in Iranian Nationwide University Entrance Exam (Konkur)

Conference/Seminar Presentation

NeurIPS Workshop 2024; American Geophycal Union 2024; Berkeley/Sloan Summer School in Environmental and Energy Economics 2024 (Egg Timer); Macro Energy Systems 2024; American Geophycal Union 2023; Seminar in Water Economics onLLine 2023; European Geosciences Union 2022; European Geosciences Union 2021

Research/Work Experience

California Institute of Technology

October 2023 – Present **The Ronald and Maxine Linde Center for Science, Society, and Policy**, Primary Advisor: Prof. Hannah Druckenmiller, Other Advisors: Prof. Georgia Gkioxari, & Prof. Connor Jerzak.
Visiting PhD Researcher (Special Student) - (On-campus from May to August 2024)

- Developing a multimodal causal inference framework to estimate Conditional Average Treatment Effect (CATE) using image-based covariates by integrating the R-Learner framework with a vision transformer architecture.
- Applying the algorithm to evaluate the economic benefits of wetlands in mitigating flood damage across the U.S.
- Presented the initial findings of this research at AGU 2024 and NeurIPS 2024.

Lawrence Berkeley National Laboratory

Jun 2023 – Present **Energy Markets & Policy Department**, Advisors: Gallen Barbose, & Dr. Erik O'Shaughnessy.
Graduate Research Assistant

- Lead the $133k acquisition of credit reports data for 13 million people from Experian, covering solar PV adopters and non-adopters across the US (Supervised by Prof. Sergio Castellanos and Joint Work with RESET LAB)
- Analyze the financial and economic outcomes of solar PV adoption, particularly its impact on individual financial health and stability using Difference-in-difference (DiD) with staggered adoption approach
- Analyze the impact of credit constraint on Solar PV adoption using a Fuzzy Regression Discontinuity (FRD) design

University of Texas at Austin

Jan 2023 – Present **RESET (Rapid, Equitable & Sustainable Energy Transitions) Lab**, Advisor: Prof. Sergio Castellanos.
Graduate Research Assistant

- Study the peer effect and diffusion of solar PV adoption, analyzing heterogeneity across race and ethnicity in the US (Research presented at AGU 2023 and MES 2024) – Paper in progress
- Develop a new method of assessing community resilience to blackouts to help inform utility investment decisions

Tehran Institute for Advanced Studies

May 2022 – Dec 2022 **Department of Economics and Finance**, *Senior Researcher*, Advisor: Prof. Shiva & Dr. Jalali-Tabar.
Research Fellow

- Analyze the disproportionate impacts of extreme flood events on low- and high-income communities in Iran

Technology Studies Institute

Oct 2020 – Sep 2021 **Policy Research in Agricultural Economics**, *Senior Researcher*, Advisors: Dr. Soltani & Prof. Shiva.
Research Fellow

- Develop a Statewide Agricultural Production model to simulate market conditions, trade, and water resources

Sharif Policy Research Institute

Oct 2019 – Sep 2020 **Policy Research in Government and Technology**, Advisor: Dr. Honarvar.
Research Assistant

- Study gig workers' livelihood on online taxi platforms using the Sustainable Livelihood Framework
- Survey +600 workers and produce a policy report for legislative recommendations.

Urmia Lake Restoration Program

June 2019 – Oct 2019 **Sharif Remote Sensing Research Center**, Advisors: Prof. Danesh-e-Yazdi & Prof. Tajrishi.
Undergraduate Summer Research Internship

- Classify croplands near Lake Urmia using machine learning algorithms and remote sensing
- Apply supervised learning on Google Earth Engine's cloud platform for large-scale analysis.

June 2018 – June 2019 **Bachelor's Thesis**, Advisor: Dr. Danesh-e-Yazdi.
Research Assistant

- **Title:** Developing a coupled hydro-economic model to assess Lake Urmia restoration policies from agricultural, socio-economic, and hydrological perspectives.using system dynamics modeling (Paper published in IWRR).

Teaching Experience

Workshops and Courses Taught

Nov 2022 **GIS & Remote Sensing Applications for Economists**, Tehran Institute for Advanced Studies.

May 2021 **Spatial Econometrics**, Saint Petersburg State University.

Dec 2021 **GIS & Remote Sensing**, Sharif University of Technology.

2018-2021 **Introduction to Programming with MATLAB**, Sharif University of Technology.

Teaching Assistant

2018-2021 **Water and Wastewater Management, Undergraduate, Prof. Safaie**, Sharif University of Technology.

Spring 2020 **Engineering Probability and Statistics, Undergraduate, Prof. Abdos**, Sharif University of Technology.

Spring 2020 **Hydraulic Laboratory, Undergraduate, Prof. Jamali**, Sharif University of Technology.

Computer skills

Python (DL/ML: PyTorch, Jax, Scikit-Learn, EconML, DoWhy), MATLAB, R, POSTGRES/MySQL, STATA, Git, AWS, Google Cloud, Linux, Google Earth Engine, ArcGIS, Adobe Illustrator

Selected Graduate Courses

- **Graduate Courses (UT Austin):** PhD Microeconomics I & II; PhD Econometrics I & II; PhD Public Economics I & II (Ongoing); PhD Empirical Industrial Organization I & II (Ongoing); Environmental Economics; Applied Machine Learning
- **Other Graduate Courses:** Qualitative Methods in Applied Economics; Operation Research; Game Theory; Mathematical Economics; Introduction to Game Theory; Advanced Math Engineering; Data Mining; Advanced Engineering Math

Selected Certifications

- **Data Engineering Professional Certificate**, DeepLearning AI, 2024
- **Generative AI with Large Language Models**, DeepLearning AI and Amazon Web Services, 2024
- **Causal Modeling in Machine Learning Workshop**, AltDeep, 2023
- **Causal Generative Machine Learning**, AltDeep, 2023
- **Causal Agents and Reinforcement Learning**, AltDeep, 2023
- **Summer School in Climate Change AI**, Climate Change AI, 2023
- **Summer School in Advanced Empirical Economics**, University of Tehran, 2022
- **Mini-MBA Program**, University of Tehran, 2021

Language

- **Persian**: Native or bilingual proficiency
- **English**: TOEFL ibt: 113 (R: 28, L: 28, W: 29, S:28), GRE: Q: 170 (96%), V: 155 (67%), AWA: 4.5 (80%)

Service and Activities

- **Program Committee**: NeurIPS Workshop in GenAI for Health
- **Reviewer**: NeurIPS Workshop in GenAI for Health, Agricultural Economics, Theoretical and Applied Climatology
- **Board of Directors**, Persian Student Society, UT Austin
- **Peer Mentor**, UT Austin
- **Teacher**, Yarigaran Education Charity Group
- **Admin/Basketball Analyst and Writer**, 3Sanieh.com
- **Varsity Basketball Athlete**, Sharif University of Technology
- **Hobbies**, Hiking; Reading Books; Listening to Music; Basketball and Running; Theater and Movies; Cooking Food

References

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