

MaryClare Roche

PHD CANDIDATE · POLITICAL SCIENTIST

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Summary

Technically trained political scientist with knack for learning new skills best suited for the project at hand. Driven by an inexplicable love of humanity and indefensible passion for math. Consummately rejects absolutist narratives.

Education

University of Rochester

PH.D. (EXPECTED DEC. 2019), M.A. IN POLITICAL SCIENCE

Rochester, NY

2013 - 2019, expected

University of Maryland, College Park

B.S. IN PHYSICS (PRIMARY) AND GOVERNMENT & POLITICS (SECONDARY)

College Park, MD

2009 - 2013

Skills

Programming

R: tidyverse, topicmodels, tm, quanteda, arabicStemR, ggplot2;

python: numpy, pandas, scipy, spaCy, gensim, matplotlib, multithreading, multiprocessing, selenium;

Software

Matlab, Mathematica, ArcGIS, Docker, Stata, LaTeX, Excel

Technical

Econometrics (Advanced), Time Series Analysis, Structural Estimation, Causal Inference, Machine Learning, Imputation, Web Scraping, Natural Language Processing (NLP) in English and Arabic

Languages

Spanish (Proficient), French (elementary), Arabic (Modern Standard, elementary)

Work Experience

University of Rochester

Rochester, New York

THESIS WORK

2013-present

- Scraped original data via multi-threading over a generated cluster of temporary, localized IP addresses with Microsoft Azure and Docker
- Created topic models using both LDA and GloVe on Arabic text in both R and python
- Utilized Optical Character Recognition (OCR) API on official government documents in Arabic to supplement missing information
- Built an Arabic-to-English dictionary using Google and Bing translator APIs
- Analyzed internal dynamics of pro- and anti-regime parties in authoritarian regimes
- Uncovered unexpected gender dynamics in Middle Eastern semi-democratic parliaments
- Created game theoretic models to explain the conditions that allow democratic institutions in authoritarian regimes to simultaneously create coordination problems for regime opposition and solve them for regime allies

RESEARCH ASSISTANT – ACCRA, GHANA

- Collected primary source data from the Department of Education, Department of Roads and Bridges, Ghanaian National Archives, and Electoral Commission
- Mapped census data collected using OCR in ArcGIS
- Developed and solved formal theoretical models, reviewed calculations, edited manuscripts

TEACHING ASSISTANT

- Taught R for statistical analysis and data presentation
- Lead recitations and mentored students at both the undergraduate and graduate level; classes included Data Analysis, Game Theory, Introduction to Comparative Politics, and Political Philosophy

International Monetary Fund

Washington, D.C.

RESEARCH ASSISTANT

Fall 2015

- Created and solved a game theoretic model describing the relation between government regulation and banks' investment portfolios
- Taught advanced game theoretic concepts

Center for European Nuclear Research (CERN)/University of Maryland High Energy

Geneva, Switzerland

Physics Group

RESEARCH ASSISTANT

Summer 2011, Summer 2012

- Collected and presented data from new detectors to be installed in the Compact Muon Solenoid (CMS) experiment at CERN. Based on the calibrations conducted, the new detectors were installed in CMS, which ultimately discovered the Higgs boson
- Taught new research assistants basic java programming