

# HASSAN RAHIM KAMIL

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## EDUCATION

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**BA** University of Illinois at Urbana-Champaign  
Double Majored in Economics & Statistics  
Minored in Mathematics

May 2019

## RELEVANT COURSEWORK

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**ECON 471**

Introduction to Applied Econometrics

**ECON 420**

International Economics

**ECON 490**

Cost-Benefit Analysis

**ECON 490**

Game Theory

**ECON 490**

Economic Policy Evaluation with Causal Interpretation

**ECON 490**

Nonlinear Econometric Models

**ECON 490**

Economic Growth

**ECON 490**

Monetary Economics

**ECON 490**

Applied Machine Learning in Economics

**ECON 490**

Applied Econometrics: Informing Policy Decisions using Descriptive and Predictive Analytics

**STAT 510**

Mathematical Statistics I  
(Graduate Section)

**STAT 429**

Time Series Analysis and Its Applications

**STAT 430**

Survival Analysis

**STAT 432**

Introduction to Statistical Learning

**STAT 425**

Applied Regression and Design

**STAT 431**

Applied Bayesian Analysis

**STAT 420**

Methods of Applied Statistics

**STAT 385**

Statistical Programming Methods

**MATH 347**

Fundamental Mathematics  
(Introduction to Abstract Algebra)

**MATH 444**

Real Analysis

**MATH 448**

Complex Variables

**MATH 441**

Differential Equations

**MATH 415**

Applied Linear Algebra

**MATH 461**  
Statistics & Probability I

**MATH 464**  
Statistics & Probability II

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## HONORS AND AWARDS.

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### **Dean's List**

Award is given to students with GPA of at least 3.86 for that given semester

### **Data Science Certificate**

Award is given to students who have completed coursework relevant to data science

### **PETRONAS Education Sponsorship Program**

Scholarship is given to students who have shown good results in the Malaysian General Certificate of Education and passed the interview stages.

### **DELTA A1, DELTA A2, DELTA B1 Certificates**

Certificates awarded by the French Ministry of Education to non-native French speakers who have passed the respective French proficiency tests.

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## PROFESSIONAL EXPERIENCE

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### **Teaching Assistant**, University of Illinois at UC

Aug 2018 – May 2019

Supervisor: James Balamuta, PhD Statistics/Informatics

- Provided academic assistance on statistical programming using R to 96 and 120 students during the Fall 2018 and Spring 2019 semesters respectively by holding two weekly office hours and grading assignments while providing valuable feedbacks. Guidance is given in-person and through an online platform named GitHub.
- Supervised group projects on building Shiny apps for clients. Apps were required to have intuitive graph visualizations and statistical models (included, but not limited to time series, survival analysis, or machine learning models) to inform clients' decisions.
- Modules taught included functional programming, object-oriented programming, data manipulation, package building and version control with Git.

### **Undergraduate Researcher**, University of Illinois at UC

Aug 2018 – May 2019

Supervisors: Alexander Bartik, PhD Applied Econometrics

Trevor H. Park, PhD Operations Research

Nazanin Khazra, PhD Economics

- Worked closely with faculty members in the economics and statistics departments to produce reproducible research.
- One of the six student researchers to present a paper on machine learning in econometrics at the 2019 Economics Symposium

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## VOLUNTEERING EXPERIENCE

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### **Campus Leader**, Teach For Malaysia

Jan 2017 – Jan 2018

- Held campaigns on campuses across the United States with high Malaysian demographics to talk about education inequity in Malaysia and the opportunities available at Teach For Malaysia.
- Scouted for future talents to be inducted into the Teach For Malaysia Fellowship Program.

**Associate**, International Council of Malaysian Scholars & Associates Feb 2017 – Feb 2018

- Participated in a case study problem on internet accessibility for clients and companies at IVEC 2017 on the University of Michigan campus.
- Became an organizing committee for the Malaysian Public Policy Competition (MPPC) 2017 on Sustainable Development and discuss about competition format, case studies and event partners.

**Legal & Policy Officer**, National Assembly of Malaysian Students Association

Jan 2017 – Jan 2018

- Piloted a data analytics program to present quantitative results to stakeholders.
- Analyzed the Malaysian student demographics in the United States to inform decision-making concerning recruitment and student welfare.

**Vice President**, Malaysian Students Association UIUC

Mar 2017 – Mar 2018

- Built close ties with associations on-and-off campus through event collaboration to increase the Malaysian Students Association's presence on-and-off campus.
- Raised funds for club members by holding food fundraisers and volunteering in football games.
- Became the point person for matters concerning external affairs.

**Rethinker**, Rethinking Economics

Jun 2017 – Aug 2017

- Assisted in planning for the Rethinking Economics tour on US campuses to reinform the economics curriculum.

## PAPERS

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### ***Determining Income Dynamics and Optimizing Tax Rate over Permanent Income***

Abstract:

*This paper aims to illustrate an application of Machine Learning in the field of Econometrics. It explores the longstanding question of the temporal causes of income, and the soundness of taxing one's income knowing his or her future incomes. It builds on the idea of decision theory that illustrates the benefit and cost functions to make comparisons between the current and proposed tax rates given the desired objective function. The tax rate optimization is done by using Lagrangian concave optimization method. Furthermore, a hypothesis testing is done to examine the validity of the author's claim that consumption under the proposed tax rate is better than that under the current tax.*

### ***Understanding the Metropolis-Hastings Algorithm***

Abstract:

*This paper explores the history of the Metropolis-Hastings algorithm, its theoretical foundation, its algorithm, and its applications in Bayesian analysis. The algorithm uses the Markov Chain Monte Carlo (MCMC) technique, in which a Markov process is iterated over the states space until convergence. A working example of the algorithm is provided using the Laplace distribution as the target distribution and the normal distribution as the proposal distribution. The Gelman-Rubin statistics is performed to assess the convergence rate and burn-in period of the process.*

### ***Determining and Predicting Substance Abuse with Psychometric Measures***

Abstract:

*This paper aims to predict different substance abuse and determine its level of association with various psychometric measures like NEO-FFI-R (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness), BIS-11 (impulsivity) and ImpSS (sensation seeking) after controlling for variables such as country, age, gender, education and ethnicity. After using different techniques employed in Machine Learning, the author describes which of the measures are significant by ranking for different drugs like cannabis, cocaine, nicotine, caffeine and such.*

## PROJECTS

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***hassan-rk.netlify.com*** [[link](#)]

- Personal website to curate contents on data science and programming. Some contents include sentiment analysis on political data, building live UI and server, and author's travel haikus.
- Programming languages to explore include R, Python3, SQL and JavaScript.
- Most source codes are made available on [GitHub](#).

***petrotheme*** [[source code](#)]

- An R package that is under development intended to be used for slide presentations, reports and visualizations during the author's time at PETRONAS.

***Gun-Related Deaths in the United States*** [[app](#)]

- A basic Shiny app developed by the author to visualize gun-related deaths in the United States from the year 2012 to year 2014. App is meant as demonstration for his students in STAT 385.

***Sentiment Analysis on Political Tweets and Predicting Google Trends Search Queries*** [[link](#)]

- A sentiment and machine learning analyses performed on Trump and Clinton's tweets during the 2016 US election. Tweets are cleaned into a document-term matrix and used to perform various predictions on Google Trends using methods like LASSO, Ridge, Random Forest, and Logit regressions.

## PRESENTATIONS

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**Paper Presentation**, "*Determining Income Dynamics and Optimizing Tax Rate over Permanent Income*," Economics Symposium, April 25, 2019.

## LANGUAGES

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**Malay:** Native speaker

**English:** Proficient in speaking and writing

**French:** Proficient in speaking and writing

## COMPUTER SKILLS

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**Programming:** R, Conda, Python3, SQL, STATA, Microsoft Azure ML, C++, JavaScript

**Applications:** Microsoft Office

## OTHER

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**Hobbies:** Baking, Writing, Embroidering, Urban Sketching, Triathlon Training

**Involvements:** Economics Club, Illini Statistics, ADSA, SIAM @ UIUC, MaSA UIUC

## REFERENCE

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**James Balamuta**, PhD Statistics/Informatics  
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