## Soheil (Sol) Sadeghi

EDUCATION University of Wisconsin-Madison, Madison, Wisconsin, USA

2013-2017

Doctor of Philosophy, Major: Statistics, Minor: Computer Science

University of Florida, Gainesville, Florida, USA

2011-2013

Master of Statistics

Sharif University of Technology, Tehran, Iran

2007-2011

Bachelor of Science in Industrial Engineering

### DISSERTATION

### Sliced Designs for Multi-platform Online Experiments

Dissertation Committee:

Peter Chien, Neeraj Arora, Kam-Wah Tsui, Anru Zhang, Paul Hoban

#### Abstract:

Multivariate testing is a popular method to improve websites, mobile apps, and email campaigns. A unique aspect of testing in the online space is that it needs to be conducted across multiple platforms such as a desktop and a smartphone. The existing experimental design literature does not offer precise guidance for such a multiplatform context. In this paper, we introduce a multi-platform design framework that allows us to measure the effect of the design factors for each platform and the interaction effect of the design factors with platforms. Substantively, the resulting designs are of great importance for testing digital campaigns across platforms. We illustrate this in an empirical email application to maximize engagement for a digital magazine. We introduce a novel "sliced effect hierarchy principle" and develop design criteria to generate factorial designs for multi-platform experiments. To help construct such designs, we prove two theorems that connect the proposed designs to the well-known minimum aberration designs. We find that experimental versions made for one platform should be similar to other platforms. From the standpoint of real world application, such homogeneous sub-designs are cheaper to implement. To assist practitioners, we provide two algorithms to construct the designs that we propose. We also tabulate sliced factorial designs with 16, 32, and 64 runs for four-platform experiments.

#### ACADEMIC TALKS

#### Math Sciences at The University of Memphis (ICODOE 2019)

Novelty and learning effects in online experiments

2019

#### **UCLA Department of Statistics (DAE 2017 Conference)**

Sliced designs for multi-platform online experiments

2017

## **UT-Dallas Naveen Jindal School of Management (Bass FORMS Conference)**

Sliced designs for multi-platform online experiments

2017

## **Stanford Graduate School of Business (Digital Marketing Conference)**

Sliced designs for multi-platform online experiments

2016

## Wisconsin School of Business

Cannibalization project with Sam's Club data 2016
Introduction to R and its role in Marketing research 2016

Machine learning applications in Marketing

2015

OTHER PROJECTS

Data Division 2015

Optimal division of large and complex datasets into homogeneous batches and allocation to different servers in order to do parallel computing

#### **Cannibalization and Halo Effect**

2015

A probabilistic approach to Cannibalizations and Halo for modeling large and complex Sam's Club data

## **Search Engine Optimization**

2014

Keyword optimization on a complex dataset from Google AdWords and designing experiments to fill empty spaces in order to improve conversion profitability

#### **Testing and Optimization**

2014-201

Efficient statistical designs for A/B testing and multivariate testing while dealing with large number of potential factors across different platforms such as PC, tablet, and smartphone

Predictive Modeling 2014

Predictive response modeling effort in between two waves of mailings to QuickBooks customers with the aim of improving wave-two response rates and company profits

Ranking Algorithms 2013

Worked on a dataset from Expedia.com with the aim of learning from consumer behaviors in order to rank hotels across different queries using machine learning algorithms

HONORS AND ACHIEVEMENTS

Research and Graduate Program Fellowship (Grinter Award) and Outstanding Academic Achievement Certificate, University of Florida, 2011–2013

Ranked **2nd** among **80** students with GPA 18.6/20 and awarded direct entrance to graduate program, Department of Industrial Engineering, Sharif University of Technology, 2010

99 percentile in the nationwide University Admission Examination, 2007

Professional Experience Data Scientist at Microsoft, working primarily on projects focused on Windows, 2017–current

**Data Scientist Intern** at **Microsoft**, worked on a productivity power metric: "Measuring and Analyzing Code-to-Customer Flow Time", summer 2016

**Data Scientist Intern** at @Walmartlabs (personalized offer team), worked on the cannibalization problem for Sam's Club data, summer 2015

**Statistical Analyst/Intern** at **Nail Iran Co.** (a Leading International Manufacturer of MERIC Lamps), worked on the Production Control Section as a statistical analyzer, summer 2010

**Executive Manager** of "KHABARNAMEH", a quarterly published by Department of Industrial Engineering, Sharif University of Technology, 2008-2009

## COURSEWORK Graduate Coursework

# • Theoretical Statistics

Course	Instructor	School
Graphical Models	Garvesh Raskutti	UW-Madison
Non-parametric Statistics	Chunming Zhang	<b>UW-Madison</b>
Mathematical Statistics	Yazhen Wang and Jun Shao	<b>UW-Madison</b>
Probability Theory	Andrew Rosalsky	UFlorida
Statistical Inference	Malay Ghosh	UFlorida
Markov Chain Monte Carlo	Hani Doss	UFlorida
Theory of Linear Models	Hani Doss	UFlorida
Theoretical Statistics	Kshitij Khare	UFlorida
Modern Analysis	Paul Robinson	UFlorida

# • Applied Statistics

Course	Instructor	School
Statistical Model Building and Learning	Grace Wahba	UW-Madison
High Dimensional Statistical Inference	Ming Yuan	UW-Madison
Multivariate Analysis	Ming Yuan	UW-Madison
Network Skills for Statistics	Brian Yandell	UW-Madison
Generalized Linear Models	Brett Presnell	UFlorida
Regression Analysis	Larry Winner	UFlorida
Design of Experiments	Larry Winner	UFlorida

# • Computer Science

Course	Instructor	School
Advanced Machine Learning Database Management Systems	Jerry Zhu AnHai Doan	UW-Madison UW-Madison
Algorithms	Deborah Joseph	UW-Madison

# **Undergraduate Coursework**

# • Industrial Engineering

Course	Instructor	School
Simulation and Statistics	Hashem Mahlooji	Sharif UT
Queueing Theory and Probability Models	Mohammad Modarres Yazdi	Sharif UT
Regression Analysis	Seyed Taghi Akhavan Niaki	Sharif UT
Operations Research	Kourosh Eshghi	Sharif UT
Statistical Quality Control	Fereidoon Kianfar	Sharif UT
Probability and Applications	Rasoul Haji	Sharif UT
Engineering Statistics	Hashem Mahlooji	Sharif UT
Probability Models	Seyed Taghi Akhavan Niaki	Sharif UT
Economics	Mohammad Hadi Chamran	Sharif UT
Principles of Marketing	Hassan Shavandi	Sharif UT
Basic Management	Hassan Shavandi	Sharif UT
Computer Information Systems	Naser Salmasi	Sharif UT