

## Uttara Madurai Ananthkrishnan

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Contact Information	Heinz College Carnegie Mellon University 4800, Forbes Ave Pittsburgh, PA 15213	<i>E-mail:</i> uttara@cmu.edu <i>Web:</i> www.andrew.cmu.edu/user/umadurai/ <i>Phone:</i> +1412-265-8635
Education	<b>Ph.D., Information Systems and Management</b> Carnegie Mellon University, Pittsburgh, PA, United States Advisors: Michael D. Smith, Rahul Telang	May 2018(Expected)
	<b>Bachelor of Engineering</b> Anna University, Tamil Nadu, India	May, 2010
Employment	<b>Google+, Google</b> <i>Abuse Analyst</i>	April 2012 - June 2013
	<b>Risk Operations, Google</b> <i>Risk Analyst</i>	June 2010 - March 2012
	<b>Indian Institute of Science (IISc)</b> <i>Summer Intern</i>	April 2008 - May 2008
	<b>Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)</b> <i>Summer Intern</i>	May 2008 - June 2008
Honors and Awards	<b>Best Student Paper Award - Runner Up, Conference on Information Systems and Technology (CIST), Nashville, TN, November 2016</b> For my paper titled: When Streams Come True - Estimating the Impact of Free Streaming Availability on EST Sales, with Michael D. Smith & Rahul Telang	
	<b>Best Student Paper Award - Runner Up, Workshop on Information Systems and Economics (WISE), Dallas, TX, December 2015</b> For my paper titled: All World's a Home - Estimating Hotel Latent Quality under Airbnb Entry, with Michael D. Smith & Beibei Li	
	<b>Best Paper Award Nomination, International Conference on Information Systems (ICIS), Dallas, TX, December 2015</b> For my paper titled: A Tangled Web: Evaluating the Impact of Displaying Fraudulent Reviews, with Michael D. Smith & Beibei Li	
	<b>Suresh Konda Memorial Ph.D. First Research Paper Award, Carnegie Mellon University, May 2015</b> This award is presented annually to the best first research paper presented at Heinz College, Carnegie Mellon University. I won this prize for my paper A Tangled Web: Evaluating the Impact of Displaying Fraudulent Reviews, with Michael D. Smith & Beibei Li	

**Product Quality Operations Gold Award, Google, Sep 2012**

For creating a new abuse workflow and enhancing user experience

**Product Quality Operations Gold Award, Google, Sep 2011**

For investigating a high profile account hacking and closing loopholes in the fraud detection models

**Product Quality Operations Gold Award, Google, May 2011**

For a market analysis that led to a change in distributing promotional coupons and enabled the shutting down of a network of fraudsters

**Best Outgoing Student, Anna University, May 2010**

Best Outgoing Student in the graduating class of 2010 for excellence in academics & extra curricular activities at Coimbatore Institute of Technology, Anna University

**Rajiv Gandhi Summer Research Fellowship, Government of India, Jawaharlal Nehru Centre for Advanced Scientific Research, April 2008**

JNCASR offers summer fellowships for two months to undergraduate students. Each year, about 5000 students from all over India apply for the 120 fellowships awarded.

**CBSE Merit Scholarship for Professional Studies, Government of India, Central Board for Secondary Education, 2006 to 2010**

CBSE awards about 350 merit scholarships for professional education in medicine and engineering from a pool of the 523,811 who appeared in the CBSE conducted All India Engineering Entrance Examinations.

**State First, Matriculation Exams, State Government of Tamil Nadu, May 2004**

Ranked 1st among 88,908 candidates in the state who appeared for the 10th standard Matriculation exam in 2004 & was awarded a state-level merit certificate by the Directorate of Education, Govt. of Tamil Nadu.

Research

**Working Papers**

- Uttara M. Ananthakrishnan, Beibei Li, Michael D. Smith - A Tangled web: Evaluating the Impact of Displaying Fraudulent reviews
- Uttara M. Ananthakrishnan, Rahul Telang, Michael D. Smith - When Streams Come True: Estimating the Impact of Free Streaming Availability on EST Sales
- Uttara M. Ananthakrishnan, Liron Sivan, Rahul Telang - Much Ado About Streaming : Effect of Subscription-based Video on Demand Platforms on Movie Sales
- Uttara M. Ananthakrishnan, Beibei Li, Davide Proserpio, Rahul Telang - Hitting Too Close to Home? The Impact of Airbnb on Hotel Entry
- Uttara M. Ananthakrishnan, Laura Brandimarte, Edward McFowland, Sriram Somanchi - Does Government Surveillance Give Twitter the Chills?

**Data Analysis**

- Uttara M. Ananthakrishnan, Catherine Tucker - The Shifters and Virality of Hate Speech Online

Peer reviewed conferences

*A Tangled web: Evaluating the Impact of Displaying Fraudulent reviews*

- Winter Conference on Business Intelligence, Salt Lake City, UT March, 2015
- Conference on Information Systems and Technology, Philadelphia, PA October 2015
- International Conference on Information Systems (ICIS), Dallas TX December 2015

*When Streams Come True: Estimating the Impact of Free Streaming Availability on EST Sales*

- Conference on Information Systems and Technology, Nashville TN, October 2016
- International Conference on Information Systems (ICIS), Dublin, Ireland December 2016

	<i>Hitting Too Close to Home? The Impact of Airbnb on Hotel Entry</i>	
	– Conference on Information Systems and Technology, Houston TX	October 2017
	<i>Does Government Surveillance Give Twitter the Chills?</i>	
	– Workshop on Information Security and Privacy, Dublin, Ireland	December 2016
	– Conference on Information Systems and Technology, Houston TX	October 2017
	– Workshop on Information Systems and Economics, Seoul, South Korea	December 2017
	<i>Much Ado About Streaming: Effect of Subscription based Video on Demand Platforms on Movie Sales</i>	
	– Workshop on Information Systems and Economics, Seoul, South Korea	December 2017
Invited talks	<i>All World's a Home: Impact of Airbnb on Hotel Entry</i>	
	– INFORMS Marketing Science Annual Meeting,	August 2017
	<i>A Tangled Web - Evaluating the Impact of Displaying Fraudulent Reviews, with Michael D. Smith &amp; Beibei Li</i>	
	– INFORMS Annual Meeting, Philadelphia, PA	November 2015
	– Production and Operations Management Society, Orlando	May 2016
	<i>Does Government Surveillance Give Twitter the Chills?</i>	
	– INFORMS Annual Meeting, Nashville, TN	November 2016
Service	<i>Reviewer:</i>	
	– International Conference on Information Systems (ICIS)	2016
	– Conference on Information Systems and Technology (CIST)	2016
	– International Conference on Information Systems (ICIS)	2017
	– Conference on Information Systems and Technology (CIST)	2017
	– Management Information Systems Quarterly	2017
Teaching	<b>Teaching Assistant</b> - Responsibilities include in-class discussions, provide hands-on trainings and demonstrations, conduct office hours and grade papers	
	<b>Business Analytics Courses</b>	
	– <i>Advanced Business Analytics</i> with Prof. Rahul Telang Masters of Information Systems Management Program ( <i>Business Intelligence and Data Analytics Track</i> ), Required Core Course	
	– Spring 2017	
	– Fall 2016	
	– <i>The Art and Science of Business Analytics</i> with Prof. Pawan Khara Masters of Information Systems Management Program, Masters of Public Policy Management Program, Masters of Entertainment Industry Management Program	
	– Summer 2017	
	– Spring 2017	

### **Digital Marketing & Information Technology Strategy Courses**

- *Digital Marketing and Strategy* with Prof. Michael D. Smith  
Masters of Information Systems Management Program, Masters of Entertainment Industry Management Program, Undergraduate Business Program
  - Spring 2017
  - Spring 2016
  - Spring 2015
  - Spring 2014
- *Digital Transformation* with Prof. Michael D. Smith  
Masters of Information Systems Management Program, Required Core Course
  - Fall 2017
  - Fall 2016
  - Fall 2015
  - Fall 2014
- *Digital Transformation* with Prof. Ari Lightman  
Masters of Information Systems Management Program, Required Core Course
  - Spring 2017
  - Spring 2016
  - Spring 2015
- *E-Business Technology & Management* with Prof. Pawan Khara  
Masters of Information Systems Management Program
  - Fall 2017

### **Strategy Development & Organizational Behavior Courses**

- *Strategy Development* with Prof. David Lassman  
Masters of Information Systems Management Program, Masters of Public Policy Management Program
  - Spring 2017
  - Spring 2016
  - Fall 2016
  - Spring 2015
  - Fall 2014
- *Organizational Design and Implementation* with Prof. David Lassman  
Masters of Information Systems Management Program, Masters of Public Policy Management Program
  - Fall 2016
  - Fall 2015
  - Fall 2014

### **Relevant Coursework**

#### *Economics, Econometrics & Marketing*

- PhD Microeconomics
- Experimental Economics
- Introduction to Econometric Theory
- Econometric Theory & Methods
- Bayesian Statistics in Marketing
- Analytical & Structural Marketing Models

*Machine Learning & Statistics*

- PhD Machine Learning
- Probabilistic Graphical Models
- Statistics for Social and Policy Analysis
- Intermediate Statistics
- Deep Learning (For no credits)

References

**Prof. Michael D. Smith**

Heinz College,  
Carnegie Mellon University,  
Pittsburgh, PA 15213  
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**Prof. Rahul Telang**

Heinz College,  
Carnegie Mellon University,  
Pittsburgh, PA 15213  
Contact: rtelang@andrew.cmu.edu

**Prof. Beibei Li**

Heinz College,  
Carnegie Mellon University,  
Pittsburgh, PA 15213  
Contact: beibeili@andrew.cmu.edu

**Prof. Catherine Tucker**

MIT Sloan School of Management,  
Cambridge, MA 02142  
Contact: cetucker@mit.edu

Working Paper  
Abstracts

- **A Tangled web: Evaluating the Impact of Displaying Fraudulent reviews**  
*Uttara M. Ananthakrishnan, Beibei Li, Michael D. Smith*

The growing influence of social media on consumer behavior has been accompanied by an increase in the use of social media sites for fraud: specifically, the practice of businesses posting fraudulent reviews to increase their own sales, or reduce the sales of their rivals. The existing literature has mainly focused on how to detect fraud such activities. However, beyond fraud detection, little is known about what review portals should do with the fraudulent reviews after detecting them. That is the question we address in our research.

Specifically, we study how consumers respond to potentially fraudulent reviews and how review portals can leverage such knowledge to design better fraud policies. To do this, we combine randomized experiments with statistical analysis using large-scale archival data from Yelp. Our experiments show that consumers tend to expand the variety of their choice set during product search and to increase their trust towards the review portal when it displays fraudulent reviews along with non-fraudulent reviews, as opposed to the more common practice of censoring suspected fraudulent reviews. We explain these results using a theoretical framework from the IS trust literature

This finding indicates consumers tend to process fraudulent and non-fraudulent information differently. It is critical for review portals to not only display the fraudulent information but also display it in a way that reduces consumer cognitive cost. Finally, our archival analysis using a Maximum Likelihood Estimation method allows us to design a novel fraud-awareness reputation system that social media sites can deploy to improve consumer trust and decision making.

– **When Streams Come True: Estimating the Impact of Free Streaming Availability on EST Sales**

*Uttara M. Ananthakrishnan, Rahul Telang, Michael D. Smith*

The rise of online digital platforms has caused a massive increase in the number of viewers who consume entertainment via streaming. To cater to this audience, television networks have started making their content instantly available on both paid and free online streaming platforms after broadcast. However, some managers now question what impact these free streaming channels have on consumption in paid channels, such as digital Electronic Sell Through.

On one hand, free streaming and EST sales could be seen by consumers as highly differentiated products in terms of the time period for which they are available, the presence or absence of advertisements, and customer platform loyalty. On the other hand, free streaming could complement EST sales or directly substitute for EST sales by the virtue of being of the same digital form.

In this paper, we empirically analyze if free streaming on a major television network's online platform cannibalizes the sales on paid channels. To do this, we use a unique dataset provided by a leading television network in the United States. We exploit the natural variation in the online streaming schedules of a prominent television show in our identification strategy. Using a difference in difference approach we find that free streaming cannibalizes EST sales by about 8.4%.

– **Much Ado About Streaming : Effect of Subscription based Video on Demand Platforms on Movie Sales**

*Uttara M. Ananthakrishnan, Liron Sivan, Rahul Telang*

Subscription based streaming platforms have become a major source of entertainment for consumers in the past few years. In this paper, we use a novel and detailed dataset of movie sales and measure the impact of SVOD platforms on the viewership and sales on other traditional online and offline platforms.

We exploit the detailed nature of the dataset and construct a control and a treatment group using information on when movies enter and exit many different SVOD platforms. We show how our model provides a differential rate of cannibalization on different streaming platforms depending on the nature of promotion and content discovery on each of these platforms. We also demonstrate how the effect of cannibalization persists even when movies exit a streaming platform and how this effect varies with the nature of promotion. Following this, we develop a model of promotion and subscription to explain the loss of revenue even after a movie exits the streaming platform. Using this model we estimate the promotional effect and the subscription effect on cannibalization.

– **Hitting Too Close to Home? The Impact of Airbnb on Hotel Entry**

*Uttara M. Ananthakrishnan, Beibei Li, Davide Proserpio, Rahul Telang*

Participation in sharing economy has been increasing in the past few years. In this paper, we study how the entry of sharing economy firms impacts the entry of incumbent hotels in the context of Airbnb. To understand the impact on entry, we exploit the temporal and geographical variability in Airbnb's entry into a market and employ a difference-in-differences specification. Further, we build a structural entry-model to understand the underlying mechanism of the business stealing effect of Airbnb. Our results suggest that an increase in of the number of Airbnb listings by 10% of the total number of hotel rooms in a market causes a decline of 17.40% in the entry of hotels belonging to the low-end category and a decline of 27% in the entry of hotels belonging to the mid-range category. Based on this, we perform policy simulations to understand the heterogeneous impact of Airbnb entry in different geographical locations.

– **Does Government Surveillance Give Twitter the Chills?**

*Uttara M. Ananthakrishnan, Laura Brandimarte, Edward McFowland, Sriram Somanchi*

Government surveillance has garnered national and international attention since Edward Snowden's revelations regarding NSA's mass surveillance programs. The research community has attempted to estimate what many refer to as *chilling effects* of surveillance, or the tendency to self-censor in order to cope with mass monitoring systems raising privacy concerns. Existing literature has focused on Google/Bing search terms, Wikipedia articles, and survey data. In this work, we use a unique, large Twitter dataset and propose a new method in order to discover and test for chilling effects in online social media platforms. The proposed method combines new statistical machine learning techniques with econometric analysis in order to detect anomalous trends in user behavior on Twitter (use of predetermined, sensitive sets of keywords) after Snowden's revelations made users aware of existing surveillance programs.