

## James M. Davis

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### RESEARCH INTERESTS

Accurately modelling customer purchasing behavior. Using models of customer purchasing behavior to identify high revenue product assortments.

### EDUCATION

<i>Ph.D.</i> , Operations Research Advised by David P. Williamson and Huseyin Topaloglu Cornell University Ithaca, NY, expected graduation 2015	<i>Bachelor of Arts</i> , Mathematics Rutgers University-Camden Camden, NJ, 2010 GPA: 4.0/4.0
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### Selected Ph.D Course Work

Statistical Principles	Probability
Applied Stochastic Processes	Analysis of Algorithms
Simulation	Adv. Topics in Theory of Computation
The Structure of Information Networks	Combinatorial Optimization
Graph Theory and Network Flows	Algorithmic Game Theory
Mathematical Programming I	Topics in Applied Operations Research
Mathematical Programming II	

### Skills

Proficient with Python, Matlab, Excel, AMPL, LaTeX formatting, SQL.

### AWARDS

***George Nicholson Student Paper Competition Finalist***, 2014

Awarded for the paper *Assortment Planning under the Multinomial Logit Model with Totally Unimodular Constraint Structures*.

***NSF Graduate Research Fellowship***, 2011

The program recognizes and supports outstanding graduate students in science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees.

***INFORMS Undergraduate Operations Research Prize Honorable Mention***, 2011

Awarded for the paper *Combinatorial Algorithms for Minimizing the Weighted Sum of Completion Times on a Single Machine*.

***Dean's Undergraduate Research Prize***, Rutgers University-Camden, 2010

***Margaret Marsh Undergraduate Research Award***, Rutgers University-Camden, 2010

Both awarded for a research project entitled *Approximation Algorithms for Facility Location and Scheduling Problems* conducted with Rajiv Gandhi while at Rutgers University-Camden.

***Career Motivation Award in Mathematics***, Rutgers University-Camden, 2009

Awarded to encourage and motivate gifted undergraduate mathematics majors who have shown early promise of exceptional scholarship in mathematics.

***Dustin Lobb Memorial Scholarship***, Cumberland County College, 2007

Awarded to an excellent student in mathematics that is congenial and friendly.

### PAPERS

James M. Davis, Huseyin Topaloglu, David P. Williamson, *Quality Consistent Discrete Pricing Under the Nested Logit Model*, working paper.

James M. Davis, Huseyin Topaloglu, David P. Williamson, *Assortment Optimization Over Time*, submitted to Operations Research Letters.

James M. Davis, Guillermo Gallego, Huseyin Topaloglu, *Assortment Planning under the Multinomial Logit Model with Totally Unimodular Constraint Structures*, submitted to Manufacturing and Service Operations Management.

James M. Davis, Guillermo Gallego, Huseyin Topaloglu, *Assortment Optimization under Variants of the Nested Logit Model*, Operations Research vol. 62, 2013.

Basile Couëtoux, James M. Davis, David P. Williamson, *A Dual-Fitting  $\frac{3}{2}$ -Approximation Algorithm for Some Minimum-Cost Graph Problems*, Mathematical Programming 2013.

James M. Davis, Rajiv Gandhi, Vijay Kothari, *Combinatorial Algorithms for Minimizing the Weighted Sum of Completion Times on a Single Machine*, Operations Research Letters 41.

## WORK EXPERIENCE

**Amazon.com Research Scientist Intern**, Summer 2014  
Used customer choice models to guide inventory placement decisions.

## PRESENTATIONS

*Assortment Planning Under the Multinomial Logit Model with Totally Unimodular Constraint Structures*, INFORMS 2013, INFORMS Revenue Management and Pricing Conference 2013, CNY Operations Research and Information Science Conference 2013

*A  $3/2$ -Approximation Algorithm for Some Minimum-Cost Graph Problems*, ESA 2012

*Assortment Optimization under Variants of the Nested Logit Model*, ISMP 2012

*Approximating Graphic TSP by Matchings*, Rutgers University-Camden 2011

*Single Machine Scheduling with Release Dates*, INFORMS 2010

*Iterative Rounding and Relaxation*, University of Penn. 2010, University of Maryland 2009

*Capacitated Vertex Cover*, Rutgers University-Camden 2009

## TEACHING EXPERIENCE

Teaching Assistant, Revenue Management, Spring 2014

Teaching Assistant, Inventory Management, Fall 2013

Teaching Assistant, Managing Operations, Summer 2013

Teaching Assistant, Stochastic Processes, Spring 2011

Teaching Assistant, Optimization I, Fall 2010

Research Advisor to Christopher Jung, Summer 2013-Fall 2013

Cornell Prison Education Program Instructor, Fall 2013, Spring 2014  
Cornell, Ithaca, NY

Teaching Assistant, Mathematical Foundations of Computer Science, Fall 2009  
Rutgers University-Camden, Camden, NJ

## PROFESSIONAL ACTIVITIES

MSOM Member, 2013-present

INFORMS Revenue Management and Pricing Section Member, 2012-present  
presented at meeting in 2013

INFORMS Member, 2010-present  
presented at meeting in 2010, 2012, and 2013

ACM Member, 2009-present

## SERVICE ACTIVITIES

ORIE Ph.D Colloquium Organizer, 2014

Led design and maintenance of ORIE presentation template, 2012-present

ORIE Graduate Association President, 2011-2012

ORIE Graduate Association Activities Planner, 2010-2011

## OUTSIDE INTERESTS

Reading twentieth century analytic philosophy. Designing and constructing furniture. Repairing and restoring antique machinery, like a 1950's vacuum and 1980's table saw. Additionally, I enjoy watching both modern and classic boxing.