

# NICHOLAS NAVAROLI

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## EDUCATION

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- 2009 - 2014 **Ph.D. in Computer Science**, University of California, Irvine      GPA: 3.842  
Adviser: Padhraic Smyth
- 2009 - 2011 **MS in Computer Science**, University of California, Irvine      GPA: 3.842  
Adviser: Padhraic Smyth
- 2005 - 2009 **BS in Computer Science**, California State University San Bernardino      GPA: 3.970  
*Minor in Mathematics. Outstanding Undergraduate of 2009.*

## WORK EXPERIENCE

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- SUMMER 2013 | *Automatic Categorization of Help Emails*
- Google Internship at **Irvine, California**
  - Classified nature of problem from user emails based on email text
  - Developed a Bernoulli variant of a topic model for classifying text
- SUMMER 2013 | *Improving Contextual Recommendations on Help Dialogue Boxes*
- Google Internship at **Irvine, California**
  - Improved context-based recommendations by removing user information in contexts
  - Developed both probabilistic (Markov chain based) and heuristic approaches
- SUMMER 2011 | *Improving Recommended Links on Help Pages*
- Google Internship at **Irvine, California**
  - Implemented similarity metrics for ranking help documents for Google's help centers
  - Developed tool for recommending help pages for structured (multiple fields) queries
- 2007-2008 | *Applying Bayesian Data Reduction Algorithm to Healthcare Applicants*
- Applied algorithm at local healthcare clinic in **San Bernardino, California**
  - Determined which questions in applications were indicative of program acceptance
  - Reduced resources spent at clinic and allowed more applicants to be accepted
- SUMMER 2007 | *Analyzing Images Using Segmentation Algorithms*
- Bio-Image Internship at **University of California, Santa Barbara**
  - Detected photoreceptor locations and attributes in images of cat retina
  - Detected nuclei locations and patterns in images of breast cancer cells

## RESEARCH EXPERIENCE

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- 2012-2013 | **Graduate Research Assistant** at UNIVERSITY OF CALIFORNIA, IRVINE  
*Clustering with Pairwise Constraints and Unknown Number of Clusters*
- Developing a probabilistic model for partitioning data into an unknown number of clusters
  - Allows biasing of clusters via pairwise constraints
  - Supervised by Professor Padhraic Smyth

- 2011-2012 | **Graduate Research Assistant** at UNIVERSITY OF CALIFORNIA, IRVINE  
*Analyzing Individual Email Communication Behavior*
- Developed probabilistic models for learning common groups of people a person emails
  - Learned how the interaction between an email user and email recipients evolve over time
  - Supervised by Professor Padhraic Smyth
- 2010-2011 | **Graduate Research Assistant** at UNIVERSITY OF CALIFORNIA, IRVINE  
*Imputing Missing Data in Graphical Models*
- Developed anytime algorithms that impute best estimates of missing data
  - Supervised by Professor Padhraic Smyth
- 2009-2010 | **Graduate Research Assistant** at UNIVERSITY OF CALIFORNIA, IRVINE  
*Inference for Graphical Models*
- Investigated algorithms for estimating most likely configuration (MAP) for Perfect Graphs
  - Designed experiments to test accuracy of existing and developed algorithms
  - Supervised by Professors Alex Ihler and Padhraic Smyth
- 2009-2010 | **Graduate Research Assistant** at UNIVERSITY OF CALIFORNIA, IRVINE  
*Probabilistic Models for Analyzing Highway Traffic Data*
- Investigated correlations between highway traffic and city attributes from U.S. Census
  - Detected and quantitatively described events (accidents, sports games, etc)
  - Supervised by Professors Padhraic Smyth and Alex Ihler
- 2008 | **Research Assistant** at CALIFORNIA STATE UNIVERSITY SAN BERNARDINO  
*Optimization of Knot Structures*
- Analyzed attributes associated with structure of knots (string of 3D vertices)
  - Developed algorithms to optimize attributes by manipulating knot structure
  - Supervised by Professor Rolland Trapp
- 2007 - 2008 | **Research Assistant** at CALIFORNIA STATE UNIVERSITY SAN BERNARDINO  
*Bayesian Data Reduction Algorithm*
- Benchmarked algorithm against Principal Component Analysis and Neural Networks
  - Supervised by Professors Arturo Concepcion and David Turner

## TEACHING EXPERIENCE

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- 2009 | **Instructional Student Assistant**, California State University San Bernardino  
 Machine Organization. *Prepared and graded assignments. Tutored students on lab material.*
- 2008 | **Instructional Student Assistant**, California State University San Bernardino  
 Digital Logic. *Prepared and graded lab assignments. Tutored students on lab material.*

## SCHOLARSHIPS AND AWARDS

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- 2011 | **National Defense Science and Engineering Graduate (NDSEG) Fellowship**
- 2009 | **ICS Fellowship**, University of California, Irvine
- 2009 | **College of Natural Sciences Outstanding Undergraduate**, CSU San Bernardino
- 2009 | **Computer Science Department Outstanding Undergraduate**, CSU San Bernardino
- 2008 | **Finalist**, 22nd Annual CSU Student Research Competition (CSU East Bay)
- 2008 | **Summer Research Grant**, Computer Science department, CSU San Bernardino
- 2008 | **Summer Research Grant**, Mathematics department, CSU San Bernardino
- 2005 | **Presidential Academic Excellence Scholarship**, California State University San Bernardino

## PUBLICATIONS

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N. Navaroli and P. Smyth. **Modeling Response Time in Human Communication Patterns**. *Proceedings of the 9th International Conference on Web and Social Media*, 2014.

N. Navaroli. **Generative Probabilistic Models for Analysis of Communication Event Data with Applications to Email Behavior**. Ph.D. Dissertation, 2014.

N. Navaroli, C. DuBois, and P. Smyth. **Modeling Individual Email Patterns over time with Latent Variable Models**. *Machine Learning Journal*, 2013.

N. Navaroli, C. DuBois, and P. Smyth. **Statistical Models for Exploring Individual Email Communication Behavior**. *Fourth Asian Conference on Machine Learning*, 2012.

J. Foulds, A. Ihler, N. Navaroli, and P. Smyth. **Revisiting MAP Estimation, Message Passing and Perfect Graphs**. *Proceedings of the 14th International Conference on AI and Statistics*, 2011.

N. Navaroli, D. Turner, A. Concepcion, and R. Lynch. **Performance Comparison of ADRS and PCA as a Preprocessor to ANN for Data Mining**. *Eighth International Conference on Intelligent Systems Design and Applications*, 2008.

## PRESENTATIONS

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- 2015 **Modeling Response Time in Human Communication Patterns**  
UNIVERSITY OF OXFORD, ICWSM 2015
- 2012 **Statistical Models for Exploring Individual Email Communication Behavior**  
SINGAPORE MANAGEMENT UNIVERSITY, ACML 2012
- 2010 **Machine Learning Techniques Applied to Freeway Traffic**  
CSU SAN BERNARDINO, Computer Science Department Seminar
- 2008 **Bridge Probability Energy of Knots**  
UNIVERSITY OF BRITISH COLUMBIA, 1041<sup>st</sup> American Mathematical Society Meeting

## COURSEWORK AND TECHNICAL SKILLS

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<b>Computer Science Classes</b>	Belief Networks, Probability Models, Probabilistic Learning, Machine Learning, Artificial Intelligence, Image Understanding, Internet
<b>Mathematical Classes</b>	Intermediate Probability and Statistical Theory, Missing Data, Stochastic Processes, Linear Algebra, Combinatorics, Number Theory
<b>Operating Systems</b>	Windows, Unix
<b>Documentation Software</b>	Word, Excel, Powerpoint, L <sup>A</sup> T <sub>E</sub> X
<b>Programming Languages</b>	C, C++, Java, Matlab, Python, Ruby

## REFERENCES

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Professor Padhraic Smyth	<i>Graduate Adviser</i>	<a href="mailto:smyth@ics.uci.edu">smyth@ics.uci.edu</a>
Professor Arturo Concepcion	<i>Undergraduate Adviser</i>	<a href="mailto:concep@csusb.edu">concep@csusb.edu</a>