

# Matthew J. Ballan

## Contact Information

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## Career Objectives

To examine and solve complex problems in a wide range of industries using simulation modeling and analysis, optimization, advanced analytics, and operations research techniques.

## Education

**North Carolina State University (NCSU)**, Raleigh, NC

Industrial and Systems Engineering  
August 2012 – May 2014, GPA: 3.63/4.0

### PhD Qualifying Examinations Passed:

- ISE 515 – Manufacturing Process Engineering
- ISE 540 – Human Factors in Systems Design
- ISE 723 – Production Planning, Scheduling and Inventory Control
- ISE 754 – Logistics Engineering

**Texas Tech University (TTU)**, Lubbock, TX

Bachelor of Science in Industrial Engineering, May 2011

Summa Cum Laude, GPA: 3.92/4.0

Minor in Mathematics

Masters of Industrial Engineering, May 2012, GPA: 3.90/4.0

## Professional Experience

*Industrial Engineer*

May 2013 – Present

**SIMCON Solutions LLC**, Dallas, TX

Primary responsibilities include utilizing simulation modeling, statistical data analysis, and custom engineering software development to solve complex problems for clients in a number of different industries. [[Company Profile](#)]

- Company Roles: simulation engineer, software developer, programmer, quality assurance, documentation
- Project Examples:
  - Designed and implemented a fully integrated simulation-based scheduling solution for a plastic compounds manufacturer
  - Developed a simulation model for inventory management and product flow optimization for a construction equipment manufacturer
  - Developed a custom simulation platform for evaluating power plant failure frequencies for an associate engineering consulting firm
  - Provided simulation modeling, programming, and statistical analysis support for numerous risk management projects at various nuclear power plants
  - Implemented a comprehensive Software Quality Assurance (SQA) program for custom simulation software used to support power plant failure analyses
  - Supported a probabilistic risk assessment (PRA) of nuclear plant failure as a result of flooding caused by upstream dam failures
  - Performed statistical modeling and analysis to predict landslide-initiated pipeline rupture risk for an oil and gas company using statistical regression techniques and machine learning algorithms
  - Drafted and reviewed project proposals, technical reports, presentations, quality assurance documentation, and training documentation

*Independent Contractor*

Jan. 2011 – Aug. 2011

**Amplisine Labs, LLC**, Lubbock, TX

Developed a web-based deterministic simulation program to model printing operations and generate accurate production cost estimates.

- Developed a thorough understanding of product flow and all business operations pertaining to the printing industry. Collected pertinent information from non-engineering personnel, translated this information into engineering drawings, flow charts, and mathematical models, and further communicated these results to our associate programmers.
- Actively contributed to the engineering design and development of user interfaces for the printing customer and our client, and gained experience in the C#, Javascript, JQuery, .NET, and SQL programming languages.

**Computer Skills**

Simulation Software: Arena, Simio, Crystal Ball  
 Programming Languages: Matlab, Visual Basic, VBA, SAS, R, Java, C#, ASP.NET, MVC  
 Statistical Packages: SAS, JMP, R, StatFit, ExpertFit, Minitab  
 Subversion Clients: Tortoise SVN, BugZilla, GitHub  
 Design: Autodesk Inventor

**Research Experience***Graduate Research Assistant*

Aug. 2011 – May 2012

**Texas Tech University**, Lubbock, TX

Implemented and analyzed a novel and innovative safety culture assessment methodology to assess the physical and cultural safety environment of the B&W Pantex plant, an affiliate of the Department of Defense responsible for the storage and maintenance of nuclear weapons.

- Distributed surveys to employees of each department, analyzed the collected data, generated reports for each department, and presented the results to management personnel

*Research Experience for Undergraduates (REU)*

May 2010 – Aug. 2010

**Case Western Reserve University (CWRU)**, Cleveland, OH

Improved the storage capacity of a multi-layered fluorescent polymer film for optical data storage applications.

- Developed a working knowledge of optical data storage, installed a spatial filter, conducted sensitivity analyses on input parameters, and analyzed the resulting data to identify optimal spatial filter and beam parameters.
- Presented a poster at Kent State University and submitted a final report to directors of the CWRU Center for Layered Polymeric Systems (CLiPS) REU program, funded by the National Science Foundation (NSF).

*Undergraduate Research Assistant*

Jan. 2010 – Dec. 2010

**Texas Tech University**, Lubbock, TX

Developed a new and innovative safety culture assessment methodology to assess the physical and cultural safety environment of the B&W Pantex plant.

- Conducted a thorough literature review on existing safety culture assessment methodologies; conducted on-site process observations, interviews, and focus groups with B&W Pantex employees and management personnel; and assisted in developing and designing the assessment instrument.
- This project resulted in numerous conference publications and poster presentations.

*Undergraduate Research Assistant*

June. 2009 – Sept. 2009

**Texas Tech University**, Lubbock, TX

The objective of this project was to improve communications in a mobile ad-hoc network (MANET) by dynamically adjusting retry limits inversely with the speed of the transmitting node.

- Conducted sensitivity analyses of static retry limits under alternative scenarios (e.g. fading environments, node speed/direction distributions) and evaluated their effect on communication quality. Executed using Network Simulator 2 (NS-2).
- Resulted in numerous presentation invitations as well as a submitted journal paper.

<b>Teaching Experience</b>	<p>Teaching Assistant <span style="float: right;">Jan. 2014 – May 2014</span>  <b>NCSU ISE Department</b>, Raleigh, NC          Assisted undergraduate and graduate students with class material, held weekly office hours, graded homework, and proctored exams on occasion.</p> <ul style="list-style-type: none"> <li>• ISE 589 – Stochastic Models in Industrial Engineering (Fall 2013)</li> <li>• ISE 441 – Introduction to Simulation (Spring 2014)</li> </ul>
<b>Publications</b>	<p><b>Peer-Reviewed Journal Articles:</b>          Tejada, J. J., Ivy, J., Wilson, J., Ballan, M. J., Diehl, K., Yankaskas, B. C., King, R. (2013). Combined DES/SD Model of Breast Cancer Screening for Older Women, I: Natural History Simulation. <i>Submitted to IIE Transactions, In Review</i>. [<a href="#">Submitted Paper</a>] [<a href="#">Online Supplement</a>]</p> <p>Tejada, J. J., Ivy, J., Wilson, J., King, R., Kay, M., Ballan, M. J., Diehl, K., Yankaskas, B. C. (2013). Combined DES/SD Model of Breast Cancer Screening for Older Women, II: Screening-and-Treatment Simulation. <i>IIE Transactions, Forthcoming</i>. [<a href="#">Accepted Paper</a>] [<a href="#">Online Supplement</a>] [<a href="#">Journal Article</a>]</p> <p>Tejada, J. J., Ballan, M.J., Ivy, J., Wilson, J., King, R. (2013). Calibration, Validation, and Analysis of a Combined DES/SD Model of Breast Cancer Screening for Older Women. Working Paper. [<a href="#">Working Paper</a>]</p> <p><b>Peer-Reviewed Conference Proceedings:</b>          Tejada, J. J., Ballan, M. J., Wilson, J., Ivy, J., Kay, M., King, R., Diehl, K., Yankaskas, B. C. (2013). Combined DES/SD Model of Breast Cancer Screening for Older Women: An Overview. <i>Proceedings of the 2013 Winter Simulation Conference</i>. [<a href="#">Accepted Paper</a>]</p>
<b>Presentations</b>	<p><b>Poster Presentations with Published Abstracts:</b>          Farris, J. A., Matis, T. I., Patterson, P. E., Phillips, A., Ballan, M., Heinz, M. (2012), Development of a Safety Culture Assessment Methodology at B&amp;W Pantex. Center for Excellence in Logistics and Distribution (CELDi).</p> <p>Ballan, M. (2010). Optimizing Beam Intensity and Exposure Time for 3-D Optical Data Storage Systems. Center for Layered Polymeric Systems (CLiPS). [<a href="#">Poster</a>] [<a href="#">Report</a>]</p>
<b>Honors &amp; Awards</b>	<p><b>NCSU</b></p> <ul style="list-style-type: none"> <li>• Dean’s Fellowship for Industrial Engineering (2012-2013)</li> </ul> <p><b>TTU</b></p> <ul style="list-style-type: none"> <li>• Industrial Engineering Departmental Academic Achievement Scholarship (2009-2011)</li> <li>• Edward E. Whitacre Jr. College of Engineering Academic Achievement Scholarship (2009-2011)</li> </ul>
<b>Memberships &amp; Activities</b>	<p>Tau Beta Bi (Inducted 2009)          Alpha Pi Mu (Inducted 2009)          Institute of Industrial Engineers (2007–Present)          Raleigh Vipers Rugby (2012–2014)</p>

**References****Dr. Jeremy J. Tejada**

President and Founder, SIMCON Solutions

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Relationship: Direct Supervisor

**Dr. Ricki Ingalls**

Principal, Diamond Head Associates

Cell Phone: (405) 612-4111

Email: [ricki.ingalls@diamond-head-associates.com](mailto:ricki.ingalls@diamond-head-associates.com)

Relationship: Partner for Various Simulation, Scheduling, and Optimization Projects

**Jim Page**

Vice President, Manner Polymers

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Relationship: Client for Multi-Phase Simulation Scheduling Project

**Dr. Bruce C. Letellier**

Principal Scientist, Alion Science and Technology

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Relationship: Client for Numerous Risk-Informed Simulation Projects for Nuclear Safety

**Dr. James R. Wilson**

Professor, Edward P. Fitts Department of Industrial and Systems Engineering, North Carolina State University

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Cell Phone: (919) 606-4031

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Relationship: Research Supervisor

**Dr. Timothy Matis**

Associate Professor, Department of Industrial Engineering, Texas Tech University

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Relationship: Undergraduate Research Supervisor

**Aaron Phillips**

President and Founder, Amplisine Labs

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Relationship: Supervisor for Undergraduate Research and Amplisine Labs Consulting Work