

# G. TALLEY HOLMAN

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## EMPLOYMENT HISTORY

### **Consultant**, Independent, Blakely, GA, 2002 - Current

More than 20 years of experience across multiple industries using a systems engineering approach to manage, analyze, and evaluate moderate to high variation systems and processes where human interaction and decision making are essential to performance, capacity, and productivity

- *Goal.* To give client's guidance and viable business options that supports the company's strategic plan and mission.
- *Services.* Provide analysis, interpretation, or expert opinion for research, reviews, inspections, audits, policy, regulation
- *Services.* Provide multi-tier solutions for guidelines, investigations, oversight, assessment, risk, prototype design, program development
- *Application.* Healthcare, industrial, and manufacturing systems, workflow logistics, operational cycles, product life-cycle (early adaption to laggard), technical support, and original research or second opinion of research performed
- *Methods.* Analytics vary using quantitative (e.g. objective) and qualitative (e.g. subjective) measures, which include but are not limited to:
  - Document management (SOPs, incidents, logbooks, etc.)
  - Safety & risk management (JSAs, HAZMAT, liability, etc.)
  - Audits (process, oversight, financial, etc.)
  - Direct individual or tandem observation (data collection)
  - Focus groups, Interviews and surveys (online or in-person)
  - Physiological/biomechanical testing (capacity, limitations, etc.)
  - Environmental testing (industrial hygiene, light, noise, etc.)
  - Psychological testing (workload, burnout, stress, etc.)
  - Workload, performance, effectiveness, root-cause analysis
  - Prototype design (objectives, specifications, standards, etc.)

### **Adjunct Professor, Industrial Engineering**, University of Louisville, Louisville, KY, 2014-2018

#### Mentoring (Doctoral Dissertations)

- Develop a motivational compensation strategy for international businesses based on worker job type, nationality, culture, etc., *Carsten Becker*, Graduation 2019 (Chair)
- Develop artificial feedback systems in next generation hybrid sports cars to improve driver lap times, *Thomas Gruenter*, Graduation 2019 (Chair)

### **Senior eHealth Systems Analyst**, American Academy of Family Physicians, Leawood, KS, 2014–2016

An interdisciplinary systems engineering position to analyze and quantify healthcare environments, workflows, procedures, and teams based on primary care objectives of defining best practices, problem solving, error recovery, modeling/simulation, tool use, and standards development

- National study evaluating Meaningful Use's benefit & burden on physicians (2015-2016, \$75,000) PI, Sponsor AAFP (6 publications)  
*Disciplines:* Engineering (statistics, workflow, data mining, human factors), Public Health (policy), Healthcare (family physicians)
  - Utilized a national panel of subject matter experts to develop standard operating procedures (SOP) for each meaningful use criteria and how those might vary so mental and physical workload on physicians could be measured
  - Used mixed methods testing via a national survey to measure impact of meaningful use criteria based on percentage of patents benefiting and level of physician burden to document in electronic medical record (EMR) software (2 Publication)
  - Stratified analysis of physician demographics showed if findings were generalized or sub-group specific (2 Publication)
- *Proposed Research:* (1) Deeper dive into meaningful use criteria with significant physician burden associated with (written) basic/routine patient care (\$244,000), Co-PI, submitted AAFP  
(2) Assessment of healthcare professionals first 5 years of practice work and home life: physical & mental

### **Director, Center for Ergonomics**, University of Louisville, Louisville, KY, 2009–2014

#### Administration & Infrastructure

- Performed physical inspections of technical equipment and resources and instituted a tracking program
- Performed financial audits of accounts, contracts, and transactions to benchmark current status
- Worked with University council to track and document irregularities, deficiencies, and misappropriations
- Maintained facilities allocation and brought certifications into compliance for regulations, laws, and University policy
- Created a 5-year strategic resource management plan while expanded the Center's mission to include healthcare
- Wrote successful internal and external funding proposals for the University, local industrial, and state or federal organizations
- Successfully completed board-of-trustees five year audit and review; approval given five year continuation
- Procured resources, designed and built **Human Sciences Laboratory** for simultaneous data capture: cognitive & physical
- Employed, trained, supervised, and mentored students in center activities and projects

#### Healthcare Research (selected)

- Designed a next generation additive manufactured, individualized cervical collar for improved patient outcomes (ongoing) (1 publication)  
*Disciplines:* Engineering (ergonomics, biomechanics, additive manufacturing), Healthcare (surgeons, orthotics, patient treatments)

- Neurosurgery and engineering collaboration to improve spinal treatment by reducing post-surgical injury and providing surgical alternatives (2014-2015, \$10,000) Co- PI, Sponsor Ky EPSCoR
- (Proposed) Creation of extension limiting semi-rigid cervical orthotic (\$100,000), Co- PI, Submitted Coultler Group
- Modeled “real world” workflows and interactions of physician-nurse teams treating patients simultaneously (7 publications)
  - Disciplines:* Engineering (simulation, operations research, reliability, statistics, workflow, LEAN, human factors), Economics, Psychology (interview, focus groups), Healthcare (physicians, surgeons, nursing)
  - Determined how an employee's job affects their perception of workflow and how to support it (2 Publication)
  - Quantified cost of wait-times in healthcare: workflow efficiency, patient safety, satisfaction, economic (2 Publication)
  - (Proposed) Evaluate how case turnover affects operating room efficiency (\$51,871), PI, Submitted UofL Hospital
- Created a real-time decision support system for healthcare and public health to manage pandemic scenarios (2011-2013, \$3,314,000), Co-investigator, Sponsor National Institute for Hometown Security
- (Proposed) Development of asthma management & monitoring smart phone peripheral device and app to improve patients compliance

#### Industrial Research (selected)

- Use evolutionary algorithms communication software to gain consensus in decision making and design (ongoing) (3 publications)
  - Disciplines:* Engineering (statistics, data mining, variable sensitivity mapping, evolutionary algorithms, human factors, safety), Psychology (human-computer interaction, cognition, focus groups), Computer Science (coding/programming)
  - Improved warning symbol design using design parameters from hand drawn images in evolutionary computation software
  - Designed symbols to improve patient comprehension during provider's subjective assessment
  - Developing internet-based software to get consensus between professional without direct interaction (ongoing)
- Developed and performed ergonomics training for leadership series (2013-2014, \$6200), PI, Sponsor Greenlee-Textron, Inc.
- Developed product time standard software tool to improve business cost (2012-2013, \$27,303), PI, Sponsor Hussey Copper
- (Proposed) Create multi-objective cost basis tool for a limited resource job shop (\$246,000), PI, Submitted Hussey Copper
- (Proposed) Develop in-house ergonomic and design standards to increase line capacity (\$98,729), PI, Submitted Dynacraft Inc.
- (Proposed) Develop behavioral safety self-assessment training to increase compliance (\$160,398), PI, Submitted Linak Inc.

#### **Assistant Professor, Industrial Engineering, University of Louisville, Louisville, KY, 2009-2014**

##### Service (selected committees & activities)

- Graduate Curriculum Committee (2013-2014)
- Survivor's guide to on-line teaching, Continuing Education (2013)
- INSPIRE, minorities in engineering program (2011-2012)
- Graduate Admissions Committee (2009-2014)
- ABET recertification (2009-2010, 2012)
- Critical thinking Initiative (2009-2011)

##### Teaching Taught 5-7 courses a semester domestically and internationally where initiative, integrity, and accountability were emphasized

- *Workplace Techniques & Management* (Graduate, 2010-2014)
- *Engineering Economics* (Undergraduate, 2014)
- *Human Factors/Ergonomics* (Undergraduate/Graduate, 2009-2013)
- *Lean Systems* (Graduate, 2011-2014)
- *Work Design* (Undergraduate, 2014)
- *Research Methods* (Graduate, 2012)

##### Mentoring Mentored US, Panamanian, and German students in industrial, systems, or mechanical engineering

###### Doctoral (\*recipient of Industrial Engineering outstanding dissertation award)

- \*Scott Hoover (2013, Co-Chair)
- Thomas Gruenter (graduation 2019, Chair)
- Carsten Becker (graduation 2019, Chair)

###### Masters (\*recipient of National 2011-12 Alpha Pi Mu Wolter J. Fabrycky award)

- Nicole Knapp (ME) (2016, Committee)
- Andrew Dreisbach (2014, Chair)
- \*Abby Wooldridge (2012, Co-Chair)
- Alessandro F. Reichert (2011, Chair)
- Samantha Knight (2014, Chair)
- Ramón Avilés (2014, Chair)
- Andrew Johnson (2012, Chair)
- Scott Hoover (2010, Committee)
- Laura Anzola (2014, Chair)
- Brad Cottrell (ME) (2013, Chair)
- Matt Stenger (2011, Chair)

##### Projects Provided leadership, guidance, and support for hundreds of student research projects (selected)

- Continuous improvement project to map direct and indirect cost of 12 months of injuries to support proposed safety budget
- Evaluated heal-strike relative to gait to compare lower extremity joint impact to reduce injury
- Evaluated performance variation and errors in people working from 4pm to 12midnight and 8am to 5pm
- Proposed technique to reduce inter-rater variability of pressure ulcer classifications for better patient outcomes (1 publication)
- Developed valid and verifiable testing protocols to improve a prototype Baja vehicle's acceleration performance in saturated soil

##### Contracts

- SPD-IE External German Doctoral Program (2009-2012, \$499,800), Instructor Sub-Contract, Intakes 1 and 2
- SPD-IE External Panama Masters Program (2009-2013, \$1,008,000), Instructor Sub-Contract, Intake 10,11,12

#### **Research Associate, Center for Quality & Productivity Improvement, University of Wisconsin, Madison, WI, 2008-2009**

- Assessed medication risk for patients during transitions of care from hospitals to clinic for workflow quality and coverage, failure recovery and impact, and system reliability. (2008-2009, \$411,000), Investigator, Sponsor NIH-AHRQ (5 publications)
- Developed tandem observation protocol to capture simultaneous point-of-view team dynamics and organization data (1 publication)

**Graduate Teaching/Research Assistant, *Industrial & Systems Engineering*, Auburn University, Auburn, AL, 2001-2007**  
**College of Engineering Teams, 2004-2006**

- Oversight safety, hygiene, and ergonomics for design, manufacturer, operation, or transport of *formula car, solar car and house*

**Laboratory Technician, 2003-2007**

- Designed, built, and maintained hardware and software (administrator) for Industrial and Systems Engineering (ISE) laboratories

**Graduate Teaching Assistant, *Marketing*, Auburn University, Auburn, AL, 2003-2004**

- Research duties included executing test protocol for psychological marketing data related to consumer behavior of mass marketing ads

**Ergonomic Intern, Delta Airlines, Atlanta, GA, 2003**

- Corporate safety member of new reservation center training and support team for Salt Lake City, USA and Santiago, Chile
- Performed ergonomic training and evaluations that developed multi-level impact versus cost recommendations

**Emergency Responder, Shaw Industries, Inc., Andalusia, AL, 1998–2001**

- Team Incident commander (team leader) of facility/ county emergency response team, 1998-1999
- Specialized training for incident management of accident, fire, evacuation, and chemical spill:
  - Hazardous waste response (Hazmat) Technician Level
  - Incident commander first response team
  - Incipient Fire Team
  - Confined Space and Rescue

**Manager / Supervisor, Shaw Industries, Inc., Andalusia, AL, December 1995–2001**

- Managed 30 to 55 employees in main production and support departments including raw materials, packing, shipping
- Implemented team leadership program that lead to multiple production records (up to 31% increase) and lowered waste up to 7%
- Managed or participated on teams:
  - Updated or developed operational (SOPs) and safety (JSAs) for multiple departments for reliability and sustainability, 1996-2001
  - Lead safety & ergonomic committees responsible for demonstrations, audits, enforcement, and incident investigation, 1997-2001
  - Participated human resource's behavioral interviewing team to hire reliable, qualified candidates based on position, 1999-2001
  - Participated facility turnover reduction team to evaluate loss and develop technical training and performance standards, 1998
  - Co-designed a behavioral safety program that improve safety procedure compliance through culture paradigm shift, 1999
  - Streamlined multiple department mergers to optimize cost where restructuring required employee transitioning and adoption, 1999

## EDUCATION

**Doctorate of Philosophy, *Industrial & Systems Engineering*, Auburn University, Auburn, AL, 2007**

*Specialization:* Human factors, biomechanics, ergonomics & safety

*Sponsor:* National Institute of Occupational Safety and Health (NIOSH) Deep South Center Education & Research Center (ERC)

- Interdisciplinary training: Regulatory laws, applications, and practice for nurses, physicians, public health, industrial hygiene

*Program:* Occupational Injury & Prevention Research & Training Program (OIPRT)

- Participated in a research exchange, *University of Algarve*, Faro, Portugal, May 2007 - July 2007
- Completed *University of Alabama Birmingham's* School of Public Health graduate (MPH) core curriculum

*Dissertation:* Evaluated patient handling's conditions and restrictions for nursing duties, environment, and culture (6 publication)

- *Funding:* Effects of Restricted Space on Patient Handling in Hospitals. (2005-2007, \$16,560), PI, Sponsor ASSE

**Master of Science, *Industrial & Systems Engineering*, Auburn University, Auburn, AL, 2004**

*Thesis:* Algorithmic Design of Workplace layout (1 publication)

**Master of Business Administration, Auburn University, Auburn, AL, 2004**

**Bachelor of Science in Manufacturing, *Industrial Management*, Georgia Southern University, Statesboro, GA, 1995**

**Bachelor of Science, *Physics*, Georgia Southern University, Statesboro, GA, 1995**

## PROFESSIONAL

**Certification** • Professional Engineer (PE), Kentucky #32853 (2017)

- Activities**
- Member, Advisor, and manuscript reviewer for professional societies, journals and conferences (2003-2018)
  - Grant reviewer for NIOSH, Kentucky Engineering & Science Foundation, National Science Foundation (2009-2017)