MICHAEL HOEFER   CURRICULUM VITAE

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Education

MS	Iowa State University, Industrial and Manufacturing Systems Engineering		May 2017

GPA: 4.0
Thesis: "Automated Design for Manufacturing and Supply Chain Using
Geometric Data Mining and Machine Learning"
Committee: M. Frank (chair), S. Vardeman, C. Krecji

BS   Iowa State University, Industrial Engineering   Dec 2015
GPA: 3.92
Graduated Summa Cum Laude with Honors
College of Engineering Student Marshal (Valedictorian)

HONORS AND AWARDS

Best Track Paper, Manufacturing and Design Division   2017
Institute of Industrial and Systems Engineers (IISE) Conference and Expo
Title: "Automated Manufacturability Analysis during Conceptual Design"

Best Oral Presentation Award   2017
Iowa State Graduate and Professional Student Research Conference
Title: "Automated Design for Manufacturing and Supply Chain"

ENGINEERING AND RESEARCH EXPERIENCE

Boeing AvionX Production, Operations, and Quality, Various Locations   Jan 2018 to Present
Lead Industrial Engineer
- Currently in the Engineering Career Foundation Program, a leadership rotational program
- Providing technical leadership on the development of a new, high-rate production system
- Leading design for manufacturing, assembly, and test (DFMA) efforts for new product development. Resulting design changes expected to result in 50% reduction in process flow time
- Developed lean manufacturing strategy utilizing point of use material storage, dynamic line balancing, and single piece flow to meet aggressive production goals
- Created functional design of new electronic assembly facility, include 2D and 3D mockups
- Modeled production system using 3D discrete event simulation software (Flexsim), simulating and optimizing 30+ years of factory operations for multiple production facilities

Boeing Global Services (BGS) Emergent Build Center, Seal Beach, CA   Jul 2017 to Dec 2017
Industrial Engineer
- Researched and implemented automatic data collection system for overall equipment effectiveness (OEE) to improve machine capacity, utilization, and efficiency
- Developed standardized quality metrics across all BGS manufacturing sites, and automated reporting through an interactive Tableau dashboard utilizing cross-database SQL queries

- Created a suite of SharePoint applications to manage shop floor operations, including machine scheduling, part tracking, and tooling management
- Led culture change effort to evaluate and improve the productivity measurement methodology used for knowledge work

Iowa State University, Dept. of Industrial Engineering, Ames, IA   Aug 2015 to May 2017
Graduate Research Assistant
- Developed automated methods of extracting geometry-based metrics from 3D CAD models, and applied metrics to machine learning methods to classify models based on manufacturing process
- Collaborated with multi-national research team to create automated manufacturability software to reduce time and cost of product development cycles
- Led integration and user interface team by developing a project vision and plan, including management of undergraduate and graduate students from diverse backgrounds
- Designed system architecture and database structure of distributed software application utilizing C#, C++, JSON, SQL databases, and CAD software

Boeing, Raw Materials Analytics, Bothell, WA   May 2016 to Aug 2016
Analytics Intern
- Performed data analytics and visualization in R to characterize supplier ordering behaviors and develop service level pricing strategies for aluminum and titanium
- Determined optimal remnant size limits for metal cutting operations to reduce inventory and improve metal utilization, including simulations and analysis of nesting software
- Wrote an automated script that discovered $4.2 million worth of unusable material in inventory with a liquidation value of over $400,000

Boeing, Composite Manufacturing Center, Puyallup, WA   May 2015 to Aug 2015
Industrial Engineering Intern
- Led cross functional team to implement automated warehouse storage for over 2000 parts, improving process time by 20% and saving significant labor costs while reducing ergonomic risks
- Designed and optimized warehouse layout using AutoCAD and warehouse management software
- Created and communicated project plan using Milestones Professional and Microsoft Project

RWTH Aachen, Aachen, Germany   May 2014 to Aug 2014
Undergraduate Research Assistant
- Developed method to analyze water quality impacted by proximity to mining sites in South Africa
- Programmed web scraping Python script to save over 200 hours of manual data collection
- Collaborated with multi-national research team to perform spatial data analysis in ArcGIS

Iowa State University, Dept. of Industrial Engineering, Ames, IA   Sept 2013 to Dec 2014
Undergraduate Research Assistant
- Designed cost modeling tool for wind turbine blade end-of-life scenarios, completed as an honors thesis, "Wind Turbine Blade Recycling: An Economic Decision Framework"
- Created and presented flight simulator for use in human computer interaction experiments, including development of a C++ plugin and documentation

Rockwell Collins, Decorah Operations, Decorah, IA   Jan 2013 to Aug 2013
Industrial Engineering Co-op
- Researched, planned, and began implementation on a $220,000 selective solder capital equipment project, saving over $60,000 annually
- Managed weather radar avionics process failure mode effects analysis (PFMEA) team and completed over 200 risk reducing action items, resulting in a Rockwell Collins Lean Award
- Designed and procured over 50 tools, templates, and fixtures in AutoCAD to improve quality, cut costs, eliminate ergonomic issues, and improve safety

Zirous, Inc., Des Moines, IA   May 2012 to Aug 2012
Application Developer Intern
- Revamped three Java EE internal business applications to improve usability, became familiar with many web development technologies
- Coordinated company wide application migration and provided continual user support

Rockwell Collins, Government Systems Software, Cedar Rapids, IA   July 2009 to Aug 2011
Software Engineering High School Intern
- Led DXL (DOORS Extension Language) intern scripting team, wrote multiple time saving scripts.
- Teaching assistant for Rockwell Collins High School C++ Course, teaching lectures and providing individual assistance with programming assignments

TEACHING EXPERIENCE

Iowa State University, Ames, IA   Aug 2016 to Dec 2016
Graduate Teaching Assistant, Industrial Engineering
- TA for IE 432, Industrial Automation, an undergraduate course covering the following topics: circuit design and analysis, PLC programming, RFID, barcoding, transducers
- Taught weekly lab section, responsible for technical instruction and grading of coursework/quizzes

Iowa State University, Ames, IA   Jan 2015 to May 2015
Undergraduate Teaching Assistant, Community Leadership and Public Service
- TA for CLPS 122, Leading with Purpose, an undergraduate course focused on developing leadership skills, personal development, and values-based behavior
- Assisted in developing course materials and grading homework assignments

Iowa State University, Ames, IA   Aug 2014 to May2015
Tutor, Academic Success Center
- Tutored multiple students in STAT 231 (Probability and Statistical Inference for Engineers)
- Created real world examples to aid in explaining statistical concepts to group

Peer Reviewed Journal and Conference Publications

Hoefer, M. and Frank, M. "Automated Manufacturing Process Selection During Conceptual Design,"
ASME Journal of Mechanical Design. 140.3 (2018): 1–12. https://doi.org/10.1115/1.4038686

Hoefer, M., Chen, N., and Frank, M. "Automated Manufacturability Analysis for Conceptual Design in
New Product Development," *Proceedings of the 2017 Industrial and Systems Engineering
Research Conference*, Pittsburg, PA, May 2017. Presenter: Hoefer.
https://www.xcdsystem.com/iise/2017_proceedings/prof2559.html
Best track paper, Manufacturing & Design Division

Hoefer, M., Frank, M., and Dorneich, M., "Geometric Analysis to Automate Design for Supply Chain,"
Proceedings of the 2017 Industrial and Systems Engineering Research Conference, Pittsburg, PA,
May 2017. Presenter: Hoefer.
https://www.xcdsystem.com/iise/2017_proceedings/prof2560.html

Other Research Publications

Hoefer, M., "Automated Design for Manufacturing and Supply Chain Using Geometric Data Mining and
Machine Learning," *Graduate Theses and Dissertations*. (2017). 15320.
https://doi.org/10.31274/etd-180810-4948

Hoefer, M. "Wind Turbine Blade Recycling: An Economic Decision Framework," Honors Project and Term
Paper. (2015).
Poster: https://lib.dr.iastate.edu/honors_posters/201512/projects/9/
Paper: http://doi.org/10.13140/RG.2.2.28393.90723

Hoefer, M. "Utilizing Data Mining and Spatial Analysis to Evaluate the Effects of Mineral Extraction on
Water Quality in South Africa," RWTH Aachen UROP Research Paper. (2014).
http://doi.org/10.13140/RG.2.2.32142.25926

Presentations

Leadership Development, "360 Mentoring," Boeing Annual Development Event, Oct 10, 2018.

Invited Webinar, "Automated Manufacturability Analysis for Conceptual Design in New Product
Development," Institute of Industrial and Systems Engineers, Jan 16, 2018.

Fundraising Speech, Marston Club Annual Dinner, Ames, IA, Fall 2014.

Professional Training

Massachusetts Institute of Technology
Certificate in Architecture and Systems Engineering, March 2018
Description: Four course certificate covering architecture of complex systems, models in engineering,
model-based systems engineering, and quantitative methods in systems engineering

The Boeing Company, Relevant Internal Training
Courses taken covering the following subjects: work measurement, negotiation, price analysis, large
scale integration science, engineering acoustics, airplane certification, SAP business intelligence

Leadership and Service

Iowa State University – Government of the Student Body

Vice President, Senator, Cabinet Member   Jan 2012 – May 2014
- Elected by student body to represent students' interest to administration and state government
- Wrote and negotiated $200,000 performance-based funding contract with student newspaper
- Led public weekly meetings of 40 senators using parliamentary procedure

Iowa State University – Freshmen Council

President   Dec 2011 – Dec 2012
- Led meetings of 100+ combined student leaders, mentored students in leadership skills
- Interviewed, selected, and led executive team of 23 student leaders

Additional Leadership and Service
- Boeing Community Engagement Volunteer, STEM outreach and mentoring USC students
- Acacia Fraternity Scholarship Chair, providing academic mentoring to 45 students
- Ambassador, College of Engineering and Industrial Engineering Department
- Engineers Without Borders Webmaster and Public Relations Chair
- Freshmen Honors Program Class Leader
- Inducted into Tau Beta Pi and Cardinal Key (Iowa State's highest honor society)
- 2014 Curling Intramural Champion
- KURE 88.5 Radio DJ and Talk Show Host

LANGUAGES

English: Native Language
German and Mandarin Chinese: Novice