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Experience

Re:Build Manufacturing

Senior Principal Scientist, Digital Group

Framingham, MA

November 2021 to Present

Lead & mentor projects related to the use & automation of digital manufacturing data to drive decision making at & across individual facilities. Build strategic direction for the use of digital tools for the long-term development of a digital thread supporting product production. Build models representing manufacturing processes in time & cost.

Key Achievements

- * Delivered product that provides prospects a self-services early estimate of the cost of thermoplastic composite parts when converting from an existing metal part. Included building code, developing customer needs directly with sales & estimating teams, & guiding the activities of two developers.
- * Led project to provide a streamlined front-end to a complex quoting tool, reducing the time to generated a quote by at least 50%. Mapped required API functionality. Guided activities of two developers.
- * Published two internal articles in company-wide newsletter covering the collaboration efforts and impacts of the above projects.

aPriori

Concord, MA

Siegburg, Germany

Principal Research Scientist

September 2020 to September 2021

Researched & provided strategic recommendations to Executive Team regarding future software direction & customer needs. Developed solution architecture & collaborate on prototypes of proposed features. Monitored technical trends & standards, assessing impacts on costing space. Mentored colleagues on manufacturing & engineering decision-making.

Key Achievements

- * Collaborated on webinar with The Barnes Global Advisors reviewing opportunities for driving cost reduction through use of additive manufacturing.
- * Presented at aPriori Cost Insight Conference on criticality of cost as a metric in product development.
- * Performed as player-coach in CEO-sponsored fast-response project supporting CodeLife Ventilator Challenge to meet needs in developing countries. Trained teams on design for manufacture (DFM) concepts. Coordinated analyses with teams & administrators. Adapted deliverables to contest changes.
- * Completed and presented assessment of opportunities of overlap between sustainability and cost data ecosystems, including prototyping with customers.

Solution Architect / Principal Consulting Engineer

November 2014 to September 2020

Customer, prospect & internal technical & business consulting, including research, architecture design & involvement in initial implementations. Mentoring & training of colleagues & customers. Led internal projects to support team efficiency & value identification.

Key Achievements

- * Researched, designed, prototyped, & delivered a methodology for including aPriori in design of experiment & optimization workflows. Presented at 5+ industry conferences. Implemented at 10+ clients & prospects. Developed best practice documentation & rollout materials. Mentored junior colleague to lead engagements.
- * Conceptualized, designed, & cocreated a comprehensive & experiential training program for more than 30 team members on the product development process (PDP). Included identification of key readings, interviews of PDP participants from industry & creation of templates & training materials.
- * Developed technical strategy to assess input sensitivity of cost model variables via automation in modeFRONTIER. Led cross-functional project to identify impact on internal processes & clients. Transitioned project for implementation.

Technical consulting & pre-sales lead, quantitative model construction, mentoring & training.

Key Achievements

- * Configured 40+ manufacturing cost models in aPriori software across 13+ customers.
- * Managed deployment efforts across 6 international sites & 100+ users for an agricultural manufacturer including cost modeling, customer training & software installation.
- * Compiled & standardized methodology for building & configuring cost models in aPriori software. Increased delivery quality. Reduced deployment times by 10%. Adapted materials for customer & partner use.
- * First member of aPriori's European Services team. Adapted technical delivery for European market.
- * Conducted pre-sales demos & workshops for more than 40 customers domestically & overseas.

University of Rhode Island

Part-Time Lecturer

Kingston, RI

September 2014 to May 2017

Lectured two terms of Product Design for Manufacturability for senior & graduate students. Adapted & updated curriculum, adding product cost, manufacturing estimating tools (aPriori & MOST) & methodologies for tool use in early product development. Guided graduate students on research papers in Design for X.

Hasbro

Product Engineer

Pawtucket, RI

April 2003 to June 2007

Product Engineering

- * Managed & developed complex products from concept to shipping on multiple toy lines.
- * Collaborated with local product team members from marketing, design & quality assurance, as well as with Hong Kong-based team members in production, vendor management, & engineering.
- * Three utility patents issued on toy designs: US Patents 7287526, 7481209, 7798364.
- * Key Products: Nerf ShowTime Hoops, N-Strike 3-in-1 Unity Power System, SuperSoaker Oozinator.

Product Development Methods & Research

- * Developed & tested a methodology for integrating new technologies into current product lines.
- * Collaborated with consultants & internal team members on research & prototype development.
- * Initiated & facilitated relationship between Hasbro & MIT's then-nascent Toy Lab.

Education

University of Rhode Island

Ph.D. Industrial & Systems Engineering

Kingston, RI

2016 to 2019

Dissertation Title: *Real-Time Geometry-Based Feedback for Design Engineers on the Environmental Impact of Manufacturing*

Developed modular energy-based models analogues to major manufacturing cost accounting areas. Implemented as a prototype extension in aPriori. Tested effectiveness of tool with users. Included identifying, assessing, & validating data for models, model construction & testing.

M.S. Manufacturing Engineering

2004 to 2007

Thesis Title: *Designing the Development Process*

Developed a prescriptive methodology for customizing tools to support the product development process based on product & company goals & requirements.

Massachusetts Institute of Technology

B.S. Mechanical Engineering

Cambridge, MA

1998 to 2002

Thesis Title: *Product Redesign of a Personal Electric Scooter*

Used classic PDP tools to review existing designs, identify customer needs, & define design changes. Implemented, then tested changes with users. Provided final recommendations.

Presentations, Publications, Patents, Volunteering, Projects & Memberships

Presentations & Publications

- * *CDi Digital Improvements*. Re:Port, Re:Build Manufacturing Internal Newsletter. Jan 2023.
- * *Thermoplastic Cost Estimator & SAMPE*. Re:Port, Re:Build Manufacturing Internal Newsletter. Jun 2022.
- * *Evaluating the Drivers of a Manufacturing Sustainability Model*. ESTECO Users' Meeting North America. Oct 26-27, 2021.
- * "Assessing Dominant Environmental Considerations in Manufacturing. *Benchmark Magazine*. NAFEMS, July 2021.
- * *Driving to the Best Engineering Decisions*. aPriori Cost Insight Conference. Nov 17, 2020.
- * *Understanding the Manufacturing Cost Drivers of Tolerance*. NAFEMS UK Virtual Conference. Nov 10, 2020.
- * *Emergy & its Application to Manufacturing Modeling*. Global Product & Systems Sustainability Workshop. Oct 5-7, 2020.
- * *Driving Innovation with Additive Manufacturing*. Sept 22nd 2020. Collaborative webinar with The Barnes Global Advisors.
- * *THERE IS SOMETHING MISSING FROM ENGINEERING OPTIMIZATION*. Blog post & webinar. Oct 23rd 2018. Collaboration with ESTECO.
- * *Including Cost in Design Optimization & Simulation during Early Design using Isight* SIMULIA Great Lakes Regional User Meeting. October 2018. Collaboration with SIMULIA.
- * *Cost Optimization in Early Design*. aPriori Cost Insight Conference. June 11, 2018. Co-presenter.
- * *An Emergy-Based Approach for Evaluating Manufacturing Process Sustainability*. 2019. In Proceedings, Emergy Synthesis 10: Theory & Applications of the Emergy Methodology, Gainesville, FL, Jan 25-27, 2018.
- * *Bringing Cost into Design Optimization*. Global Product Data Interoperability Summit. Phoenix, Sept 2017.
- * *Design of Experiments: Integrating FEA & PCM for Multi-Variant Optimization*. aPriori Cost Insight Conference. Feb 6-8, 2017.
- * *Bringing Cost into Design Optimization*. SIMULIA Great Lakes Regional User Meeting. Oct 2016.
- * *Using aPriori in a Cross-Functional VA/VE Process*. aPriori STARs Conference. Feb 8 - 10, 2016.
- * *Best Practices for Managing Costing Projects & Integrating aPriori into Your Business Processes*. aPriori European STARs Conference. Jan 14-15, 2015. Co-presenter.
- * *Analyzing Components that are Flagged As Outliers*. aPriori STARs Conference. Feb 12 - 12, 2014.
- * *Commodity Costing Workshop: Plastics*. aPriori STARs Conference. Feb 12-13, 2014.
- * *User Guided Costing/Costing without CAD*. aPriori European STARs Conference. Jun 25, 2013. Co-presenter.
- * "Designing the Product Development Process," *ASME 2007 International Design Engineering Technical Conferences & Computers & Information in Engineering Conference (IDETC/CIE2007)*, Sept 7, 2007.
- * *The Overlap Between TRIZ & Lean*. Innovation-TRIZ.com. Mar 2006.

Patents

- * US Patent 20,200,372,530 "SYSTEMS AND METHODS FOR BULK COMPONENT ANALYSIS" Issue Date: November 2020.
- * US Patent 7,798,364 "Toy water gun for discharging and mixing multiple liquids." Issue Date: December 2010.
- * US Patent 7,481,209 "Toy projectile launcher with slidable outer cylinder and stationary inner cylinder." Issue Date: January 2009.
- * US Patent 7,287,526 "Toy projectile launcher with slidable outer cylinder and stationary inner cylinder." Issue Date: October 2007.

Awards

- * Bikes Not Bombs Volunteer of the Month Nov 2021: Awarded for consistent and engaged volunteer work in the bike shop and in mentoring youth apprentices.

- * aPriori Monthly Employee Award Apr 2020: Awarded for exceptional number of detailed issues identified during internal employee test event, driving infrastructure changes to user interface.
- * aPriori Monthly Employee Award Oct 2017: Awarded for last-minute assistance in providing customer facing training on niche machining topic.
- * aPriori FY2015 "Quantum Leap" Award: Awarded to cross-functional team of three for the development of an extension layer on aPriori enabling the management of cost estimates through the product & cost development process.
- * aPriori FY2014 "Above & Beyond" Award: Awarded for consistent, innovative & comprehensive assistance in problem solving for sales, clients & internal resources, enabling creative sales & implementation solutions.
- * aPriori 2012 Q3 Customer Facing Employee of the Quarter: Awarded for consistent positive reviews from customer interactions & collaboration with sales team on product gap presentation to Executive Team.

Volunteer Work

- * Leadership Coach in Community Catalyst Leadership Program through the MIT Alumni Association. Coach MIT undergraduate students on leadership, career, & related topics through a multi-year, ongoing relationship. Mar 2016 to Present.
- * Educational Counselor for the MIT Educational Council. Interview MIT undergraduate applicants as part of the admissions process. Dec 2020 to Present.
- * Mechanic's Apprentice for Bikes not Bombs. Support efforts to prepare bicycles for refurbishment by partners in developing countries. June 2021 to Present.

Miscellaneous Projects & Activities

- * Global Product & Systems Sustainability Trial Podcast. Oct 2018 – Dec 2018. Private, short-run conversation-style podcast for GPSS Conference participants to continue the conversation beyond the conference.
- * Wild Pitches Podcast. Feb 2016 to Mar 2018. Conversational & humorous podcast examining a seemingly bad business idea for possible implementation.
- * SAMI Consulting Futures Cohort Member. Bimonthly meetings over the course of a year to support development & provide community to futures thinking practitioners. September 2020 - Present

Organizational Memberships

- * American Society of Mechanical Engineers. From: 1998. Member.
- * MIT Club of Boston. From: 2013. Member.
- * New England Mountain Bike Association. From: 2018. Member.
- * Boston Cyclists Union. From: 2020. Member.

Skills & Software

aPriori, aPriori CSL, MOST, basic CAD & FEA, basic Python, ESTECO modeFRONTIER, $\LaTeX$, Emery Synthesis Modeling, JIRA, Confluence, problem solving & needs mapping techniques (Lean, TRIZ, Pugh, HOQ, FMEA). Audio editing using Audacity. Video editing using Camtasia. MS Office Suite including strong Excel, Powerpoint, & SharePoint skills. Comfortable with machine & wood shop tools. Familiar with basic agile techniques. Strong technical writer & public speaker. Intermediate conversational German (B1.1). Future thinker using Superforecasting & IFTF methods.