

Mike McDonnell

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APPLIED AI & DATA ENGINEERING LEADER

Principal Product Development Engineer with 20+ years of experience leading innovation across the full product lifecycle, augmented by deep expertise in artificial intelligence, machine learning, data engineering, and software development. Proven track record of architecting AI-driven systems, predictive models, and enterprise data platforms that accelerate R&D, enhance product performance, and transform engineering workflows. Named inventor on 25+ patents spanning advanced mechanical design, embedded systems, and digital technologies. Leads cross-functional adoption of AI-enabled tools and data-driven decision-making across engineering, innovation, and business functions.

WORK EXPERIENCE

COBRA PUMA GOLF

Principal Development Engineer – Innovation
Sr. Innovation Development Engineer

CARLSBAD, CA
January 2022 – Present
January 2018 – Jan 2022

- Identify and lead the application of AI/ML, data engineering, and software development across Innovation and R&D, developing intelligent systems, predictive models, and scalable data platforms that enhance product development, testing, and decision-making.
- Lead mid-to-long-term innovation projects (1 to 4 year timelines) developing next-generation club designs, manufacturing processes, materials, coatings, and embedded technologies from concept through production.
- Conducted 20+ international supplier visits across 5 countries (China, Hong Kong, Taiwan, Vietnam, Mexico), establishing new manufacturing partnerships and resolving process-level production challenges.
- Named inventor on 25+ patents spanning advanced club design, embedded electronics, and blockchain integration.
- Developed production-grade Python applications and automation product measurement pipelines for engineering data processing (ie. 3D scan analysis), replacing manual workflows and standardizing data capture across product designs.
- Built advanced computational design systems using NXOpen integrated with LLM-driven pipelines, enabling automated feature analysis, parametric updates, and fully programmatic 3D model generation.
- Designed and deployed internal data applications and dashboards (Power BI, Power Apps, Python-based tools) enabling real-time access to performance data, analytics, and predictive insights across cross-functional teams.
- Analyzed large-scale Arccos Snowflake datasets (150M+ real-world golf shots) using SQL and clustering techniques to generate insights on player behavior and product performance, informing R&D, Sales, and Marketing strategies.
- Developed and deployed machine learning models, including regression and clustering approaches, to predict club performance and optimize design parameters, reducing reliance on iterative physical prototyping.
- Built AI-driven tools leveraging NLP, LLMs, and agent frameworks to analyze consumer sentiment (YouTube, forums) and automate reporting, accelerating insight generation for product development and marketing.
- Applied LangChain agents and generative AI platforms (Microsoft AI Builder, Google Veo/Gemini) to automate reporting workflows and accelerate early-stage concept exploration.

- Developed computer vision models (PyTorch, TensorFlow) to enable automated product identification and explore AI-driven quality control and validation workflows.
- Evolved CRAD into a scalable enterprise R&D data platform (Power Apps ecosystem) with automated dashboards, real-time reporting, and cross-team data visibility, supporting 30+ engineers and high-frequency decision-making workflows.

Test Engineering Manager

March 2015 – January 2018

Sr. Research and Testing Engineer

August 2012 - March 2015

- Managed a team of 3 R&D Technicians executing 2,000+ test requests per year across golf club performance, durability, and manufacturing process validation.
- Led consumer research initiatives to surface unmet customer needs and translate findings into actionable product requirements for future development pipelines.
- Architected and scaled CRAD, a proprietary enterprise R&D data platform supporting 30+ engineers and 10M+ data points, establishing the foundational data architecture for testing, product development, and engineering analytics across the organization.
- Developed automated analytics and reporting systems (Power BI, Tableau) to replace manual processes, enabling real-time visibility into performance data and identifying recurring failure modes to inform product design improvements.
- Designed and executed 25+ structured test protocols across performance, durability, and manufacturing validation, ensuring all products met specification prior to production release.
- Managed 3D motion capture data collection, cleanup, and analysis using OptiTrack Motive and GEARS software to study swing mechanics and club interaction.

Sr. Product Development Engineer

March 2010 – August 2012

- Led global development efforts with international suppliers, overseeing manufacturing processes, resolving production challenges, and ensuring on-time delivery of prototypes and production components.
- Developed components using diverse manufacturing processes including injection molding, machining, casting, forging, 3D printing metal, and advanced finishing techniques (PVD, anodizing, and painting).
- Led development of multiple multi-million dollar products from concept through production, delivering on time, within budget, and meeting all performance and quality targets.
- Developed and standardized product specifications and collaborated cross-functionally with design, manufacturing, marketing, and sourcing teams across multiple concurrent programs.
- Played a key role in establishing a \$1.5M R&D testing lab following the PUMA acquisition, building foundational infrastructure for long-term engineering and validation capabilities.

ACUSHNET COMPANY – COBRA GOLF

CARLSBAD, CA

Associate Design Engineer / Product Development Engineer

April 2007 - March 2010

- Measured and validated golf club specifications across component and assembly stages to ensure design compliance.
- Developed and maintained standardized test request processes, project schedules, and specification documentation used across the product development team.
- Coordinated and conducted performance, durability, consumer, and player testing using in-house and outside agency resources; validated golf club specifications across component and assembly stages.

MacMILLAN ASSOCIATES, INC.

BAY CITY, MI

Mechanical Engineer

2006 – 2007

EDUCATION

Michigan State University - East Lansing, MI
Bachelor of Science - Mechanical Engineering

2002 - 2006

TECHNICAL EXPERTISE

- Artificial Intelligence & Machine Learning (Predictive Modeling, NLP, Computer Vision, Generative AI, RAG)
- AI Systems & Agent Frameworks (LangChain, AI Builder, LLM integrations)
- Data Engineering & Architecture (SQL, Snowflake, Dataverse, large-scale R&D data systems)
- Software Development (Python, APIs, automation tools, NXOpen, internal platforms)
- Cloud & Analytics Platforms (AWS, Power BI, Power Apps, Streamlit)
- Engineering & Product Development (FEA-informed design, testing, manufacturing optimization)