Matthew McCord

San Diego, California

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Skills

- Technical Leadership
- Product Development
- Creative Design
- System Architecture
- Technology Innovation
- HW & SW Engineering
- UX & UI Design
- Rapid Prototyping

Software

- SolidWorks, FEA
- Microsoft Office
- Microsoft Project, Visio
- Adobe Creative Suite
- Asana, Clickup, Notion
- Visual Studio, Jupyter

Programming

- HTML & CSS
- PHP
- Java & JavaScript
- ASP.NET
- Python
- C#

Patents

- WO 2023/220447 A2
  Mission-adaptable aerial vehicle and methods for in-field assembly and use
- US 11,192,100 B2
  Multi-factor urine test system that adjusts for lighting and timing
- US 10,928,325 B1
  Urine test system with nutritional Recommendations
- US 10,383,606 B1
  Toilet based urine analysis system

Summary

Engineer, inventor, and 2x entrepreneur who excels at collaborative innovation and creative design on a mission to develop new products and technologies that enrich people's lives in responsible ways. Over 15 years of experience developing medical devices, consumer products, industrial tools, and automation equipment with small to large scale companies. Expert in product development, cross-functional leadership, science and engineering, creative design, technology innovation, intellectual property, coming up with bright ideas and making them into beautiful products.

Specialties include health tech, defense tech, system architecture, electro-mechanical, opto-thermal, aerospace, industrial engineering, user experience design, rapid prototyping, additive manufacturing, injection molding, CNC machining, DFM, FEA, FMEA, ISO 13485, 21 CFR 820, automation, robotics, sensors, optics, photonics, spectrophotometry, medical science, biochemistry, microbiology, immunoassays, computer vision, machine learning, data intelligence and visualization.

Experience

Firestorm

Head of Mechanical Engineering

Nov 2022 – Present · 1 year 8 months

- Designed advanced modular 3D printed unmanned aircraft platforms that secured government contracts and passed rigorous trials (survived sweltering desert, frozen tundra, attack from focused EMP weapons)
- Took multiple product ideas through proof of concept, prototyping, and development and helped grow the team from 4 people to over 40
- Received high level product vision and long term goals from customers/co-founders and generated highly detailed project objectives and product requirements to drive engineering design decisions
- Provided expert mechanical design solutions for a wide range of engineering and manufacturing challenges, ensuring all designs met functional and performance requirements
- Created and implemented deep interviewing processes to filter through hundreds of applicants and hired the best of the best engineers to create an incredibly capable and cohesive team
- Managed the mechanical engineering team, deployed the resources and tools needed to deliver dozens of projects on schedule, and laid the foundation for future growth
- Provided technical guidance and mentorship to junior engineers and other team members
- Supervised design, prototyping, and testing of mechanical components and electro-mechanical systems, provided critical feedback and made necessary adjustments to designs as needed
- Led failure mode and effect analysis (FMEA) to identify risk areas in various designs and provided effective mitigation strategies

- US 11,457,568 B2
  Multiple colors, and color palettes, of narrowband photosynthetically active radiation (PAR) time-staged over hours, days, and growing seasons yields superior plant growth
- US 10,602,669 B2
  Narrowband photosynthetically active radiation (PAR) substantially only at each of multiple emission wavelengths yields good photosynthesis at reduced energy cost

Vessel

Co-founder, Head of Hardware and Innovation

Aug 2017 – May 2022 · 4 years 10 months

- Created the world's first affordable and consumer friendly in-home instant test for a wide range of vitamins and minerals, hormones, and more
- Helped raise over $20M in funding and grew team from zero to over 40 people
- Led the engineering and science team to develop hardware and consumables
- Ran scrum meetings, weekly sprints, and department OKRs (Agile Black Belt)
- Helped design app user interface (4 stars in app store) and grew user base to over 20,000 monthly active users

Symbiotic Systems

Co-Founder, CTO

Oct 2011 – Apr 2018 · 6 years 7 months

- Created the world's first app controlled agricultural LEDs to deliver sun intensity light with dynamic spectrum spanning from ultraviolet to infrared
- Demonstrated 300% increase in tomato fruit mass (grams per watt) in third party trials against premium HPS lights
- Demonstrated up to 500% increase in various terpenes in trials against HPS lights
- Invented and patented multiple power and lighting technologies
- Set up production lines and supply chains with dozens of custom component manufacturers
- Designed and manufactured commercial grade ultra high intensity 11-band spectrum adjustable intelligent LED systems for agricultural and biotech applications
- Coordinated scientific research trials with amazing results and produced data driven white papers
- Produced technical data, business plans, slide decks, financials, raised capital

Merlin CSI

Electromechanical Systems Engineer

Mar 2012 – Dec 2014 · 2 years 10 months

- Created mobile and web applications for presenting live data and analyzing historical data from proprietary computer systems in the field connected by satellite and cellular networks
- Developed industrial automation systems with programmable logic controllers
- Designed, manufactured, and assembled custom robotics for various applications
- Provided engineering services onsite, integrating into different engineering teams
- Programed CNC machines to fabricate parts from aluminum, steel, titanium, invar
- Created fixtures and procedures for manufacturing inspection and quality control
- Designed user experience, human machine interaction, and software interface usability

CareFusion

Consultant, Mechanical Engineering & Industrial Design

Nov 2012 – Feb 2013 · 4 month contract

- New Product Development (Codename Trident)
- Responsible for mechanical and industrial design of multiple touch screen products
- Created recognizable shapes across family of products with modern surfacing techniques such as continuous curvature
- Designed injection molded plastic housing to be ergonomic, durable, and sanitary
- Selected special materials to survive aggressive cleaning chemicals and drop testing
- Design eliminated fluid ingress and features that trap dirt
- Design included capacitive flex circuit to attach inside of housing and detect touch in multiple areas
- Created shielding to protect display signal and noisy electronics from electromagnetic interference
- Developed specification for projected capacitance touch screen stack and mechanical button stack with metal dome switch and light guide illumination
- Designed to be field serviceable and easily replaceable

Nordson Asymtek

Consultant, Mechanical Engineering

Mar 2012 – Oct 2012 · 8 month contract

- New Product Development (Codename G5)
- Designed and constructed industrial grade enclosure for secure mounting and connecting of proprietary electronics, rack mount computers, and ultra high voltage three phase power supplies allowing rapid access for service and maintenance
- Performed failure mode and effect analysis (FMEA) on mechanical parts and assemblies
- Designed, assembled, and tested complex pneumatics for operation of pick-and-place type machine including conveyor system, precision fluid dispensing valve, cooling and heating
- Evaluated solenoid valves and electropneumatic regulators from all applicable pneumatics manufacturers comparing response times and hysteresis to qualify products for use

Environmental Lights

Product Engineer

Feb 2011 – Oct 2011 · 9 months

- Designed and tested LED lighting and power systems for custom applications including high profile television shows and large scale energy saving installations in hotels and restaurants
- Developed high efficiency LED products to stimulate algae growth in bioreactors which consume exhaust gasses and produce renewable crude oil and feedstock
- Communicated directly with customers to determine unmet needs and demand for new products

- Introduced new products after extensive testing and created easy to understand technical documents to describe installation and operation of complex electrical systems
- Constructed professional quality photography studio and created product photos and videos
- Handled sales and technical support with 100% customer satisfaction and retention
- Performed market leading research on LED bulbs and magnetic driver compatibility with forward phase dimmers, reverse phase dimmers, and phase adaptive dimmers

Cognitive TPG

Mechanical Engineer

Jun 2008 – Oct 2010 · 2 years 5 months

- Successfully managed engineering projects from prototyping to manufacturing
- Communicated with customers, agreed upon deadlines, and delivered products ahead of schedule
- Produced solid models and engineering drawings with geometric dimensions and tolerances (GD&T)
- Learned to design complex parts effectively for manufacturability with different materials and processes such as 5 axis machining, wire EDM, stamping, casting, injection molding, and rapid prototyping
- Purchased ASTM and ISO standards and published technical procedures in the form of user friendly step by step manuals to reduce inconsistency among parts designed by different engineers
- Conducted thermal tests and stress tests to understand modes of failure and improve reliability

LawInfo

Web Developer, SEO Specialist

Jun 2006 – Aug 2007 · 1 year 3 months

- Employed strategies to increase traffic from search engines and revenue from ads
- Created website generator tool with database of legal content and more than 50 CSS templates reducing the development time frame for most websites by 90%

Education

Washington University in St. Louis

Bachelor of Science, Mechanical & Aerospace Engineering

Aug 2004 – May 2008 · 4 years

- Activities and Societies: University Nanosatellite Program, EnCouncil, Vertigo 2008, Martial Arts (Shotokan and Goju-Ryu)
- Advanced Coursework: Biomedical Engineering, Mechanical Design and Machine Elements, Manufacturing Processes, Mechanical Behavior of Composites, Advanced Space Mission Design, Advanced CAD and Finite Element Analysis (FEA)
- Additional Studies: Business Management, Micro and Macro Economics, Finance

San Dieguito Academy

Aug 2000 – May 2004 · 4 years

- Activities and Societies: Varsity Tennis, Leadership, Science Fair
- Advanced Coursework: College Computer Programming (Java)

Volunteering

Abraxas Community Farm

Founder, Educator, Advisor

Jun 2015 – Present · 9 years 1 month

- Donated 3000 gallon sustainable aquaponics system with 500 tilapia and custom hydroponics to Abraxas High School
- Rebuilt the whole living system on campus to start the Abraxas community garden
- Educated teachers and students on balancing the system and growing healthy food
- More info and pictures at https://www.instagram.com/abraxasgardenkitchen

Machine Learning Society

Hackathon Speaker and Technology Advisor

Jan 2020 – Mar 2020 · 3 months

- Speaker and team advisor at the Kinetic Playground hackathon sponsored by Intel

Chopra Center for Wellbeing

Volunteer

Oct 2016 – Dec 2017 · 1 year 3 months

- Set up events exploring research on epigenetics, microbiome, and consciousness