

Alvaro Emmanuel Jimenez

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PROFESSIONAL SUMMARY

Mechanical Design Engineer with strong R&D background in early-stage product development, integration, and validation of electromechanical systems for high-performance machinery. Specialized in 3D modeling (injection molding, sheet metal, casting) design for manufacturing and assembly, system-level integration, and design optimization. Proven ability to execute through lab and field testing, documentation, and cross-functional collaboration within fast-paced product development cycles.

EDUCATION

Tecnologico de Monterrey (ITESM)

B.S. in Mechatronics Engineering

August 2016 - December 2021

GPA 3.5

PROFESSIONAL EXPERIENCE

Design Engineer II

November 2021 - Present

John Deere

- **Designed mechanical subsystems** with focus on performance, reliability, and integration into larger assemblies; **conducted lab and field** testing to validate functionality and supported design iterations to meet quality standards.
- **Created 3D models and 2D drawings** using SolidWorks and Creo Parametric; applied GD&T (ASME Y14.5-2018) and managed BOMs and documentation using SAP and WindChill.
- **Performed design simulations** including FEA and motion studies (ANSYS, SimSolid); contributed to design improvements based on analysis results.
- Translated product requirements into mechanical specifications, tolerances, and test procedures, **collaborating with engineering, manufacturing, and quality teams** to ensure successful prototype, pilot, and production builds.
- **Led product development** of a hydraulic actuation system IRHD, from concept design and prototyping to testing and production release, aligning with cross-functional teams across design, manufacturing, and validation.
- **Developed and validated** ExactChem, a closed-loop pesticide delivery system, applying control-based actuation and integration of electronic components, sensors, and mechanical subsystems.

PROJECTS AND RESEARCH

Patent Publication | *Deere Ref. P34767-US-PRI*

May 2024

- **“Wing Frame Set with Angle Pivoting for Narrow Transportation”** Inventor of a dual-pivot lift mechanism that transitions a planter wing from field to transport position in one hydraulic motion. Approved in US and EU; public release expected in 8 months.

Rescue Robot RoboCup | *Product Development, DFMA, SolidWorks*

January 2020 - December 2021

- Led the design of an autonomous rescue robot for RoboCup 2022, managing requirements, milestones, and validation. Collaborated on mechanical design, control algorithms, and computer vision integration.

Automatic Guided Vehicle | *Product Development, FEA, DFMA, SolidWorks*

May 2018 - May 2020

- Designed and built a semi-autonomous mobile robot capable of performing warehouse tasks via a custom mobile application. Collaborated effectively in a multidisciplinary team and managed complex assemblies and manufacturing processes.

TECHNICAL SKILLS

Design & Manufacturing: Design for manufacturing and assembly, Finite element analysis GD&T, Injection Molding, Sheet Metal, Casting, Prototyping, 3D Printing, Manufacturing Processes

CAD/CAE Tools: SolidWorks, Creo Parametric, CATIA, Fusion 360, ANSYS, SimSolid, Inspire, Creo Simulation

Systems: PLM (WindChill), SAP

Certifications: Mechanical Design Professional (CSWP) , Microsoft Office Specialist Expert, SCRUM Fundamentals

Languages: Spanish Native, English C1, Portuguese A2