BALA MANIKANTA

Robotic Simulation Engineer

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Profile Summary

Robotic Simulation Engineer with 3 years of experience in BIW automation. Proficient in Process Simulate for developing, validating, and optimizing robotic welding and assembly processes. Skilled in digital twin creation, cycle time optimization, collision-free path planning, fixture validation, and multi-robot coordination. Strong understanding of GD&T, welding practices, and automotive manufacturing standards. Focused on delivering efficient, reliable, and scalable automation solutions.

Core Skills

- Siemens Process Simulate

- CATIA V5, Creo, AutoCAD, Vismockup

- Robots: Fanuc, Nachi, Kawasaki, ABB, Kuka

- BIW Welding Process | Fixture & Gripper Validation

- Path Planning | Reachability | Kinematics

- GD&T | Sheet Metal | Design & Drafting

Professional Experience

Robotic Simulation Engineer — Envision Integrated Services (Mar 2022 – Feb 2025)

- CSG – Brampton_J4U (Underbody Assembly)

  - Delivered simulation for 8-robot (Fanuc & Nachi) BIW underbody cell.
  - Performed weld spot distribution, panel feasibility & fixture/gripper validation.
  - Assigned kinematics to gun, gripper and fixtures.
  - Developed collision-free paths for spot, sealing, ped welding & handling.

- Axiscades – Vestas V236 Blue Marlin Mk01

  - Performed CAD validation and BOM integrity checks for product updates.

- Verified assembly feasibility and process simulation using PWIs.
- Conducted dynamic flow simulations, tool accessibility validation, and ergonomic studies to enhance safety and efficiency.
- Developed rework/retrofit instructions ensuring smooth implementation of design updates.

- Hirotec – TATA P-500 (Closures: RDRH & RDLH)

  - Executed simulation for 18-robot (Kawasaki) BIW closures cell.
  - Performed weld feasibility and motion planning.
  - Developed optimized collision-free welding and sealing paths.

- Group of Engineers – Ferrari F-162 (Body Sides, Framer)

  - Managed robotic simulation for 3-robot (ABB) BIW body-side cell.
  - Implemented optimized motion paths ensuring full clearance.

- Moldek – Autotek BEV EJ Rear Cradle (Underbody)

  - Handled 8-robot (Kuka) ARC welding simulation.
  - Created arc bead projections and validated weld access & fixture movements.

- TATA TECHNOLOGIES – JLRX900 (Body Sides)

  - Supported BIW pre-engineering robotic simulation, including product validation, gun selection, and process validation.

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Education

Bachelor of Engineering in Mechanical Engineering

SRK Institute of Engineering and Technology (Affiliated to JNTU Kakinada) - 2018

Diploma in mechanical engineering

A.A.N.M. & V.V.R.S.R. Polytechnic, Gudlavalleru - 2015