

DR. CARLOS FABIAN NAVA

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Professional Summary

Accomplished Maintenance and Automation Staff Manager with 24+ years of experience. Proven ability to lead and motivate teams to achieve daily production goals while maintaining the highest quality standards. Expertise in implementing and optimizing automation processes using the latest technologies, including Sensor and Tooling Parts, Automation & Digitalization, Robotics, Computer Vision, OCR, Artificial Intelligence & Machine Learning, Big Data. Successfully implemented Industry 4.0 solutions to improve processes and develop new technologies and prototypes. Proven track record of managing internal departments and external suppliers to ensure efficient equipment maintenance and project execution. Talented leader with expert team leadership, planning, and organizational skills. Proven ability to equip employees to independently handle daily functions and meet customer needs. Diligent trainer and mentor with exceptional management abilities and results-driven approach. Enthusiastic in Machine Learning & Computer Vision with developments in OCR and Pattern Recognition with several US patents and IEEE papers conferences.

Skills

- Maintenance Equipment & Project Management.
- Lean, Kaizen, TPM, OEE, Six Sigma, PPAP.
- Measurement & Control of KPIs.
- Research and Development (R&D).
- Industrial Automation, Control Systems Design, Robotics.
- Continuous improvement & Innovation.
- Development and Evaluation of new equipment, tools, prototypes. Budget estimation for complete projects, Capital Needs & Management.
- Data Science (Machine Learning, AI, Deep Learning).
- Computer Vision, Digital & Image Signal Processing, Optics, OCR Data Extraction, Pattern Recognition.
- Industry 4.0, Big Data, Simulation, Integration, IoT, Additive Manufacturing, Cloud Computing.
- Software Development, LabVIEW, SQL, Python, Matlab, C, C#, Secs-Gem, Minitab, PLCs.
- Continuously learning on new automation technologies for Smart Factories.

Work History

Automation Staff Manager Skyworks Solutions, Inc

Dec 2014 - Apr 2023
Mexicali, Baja California, México

- Managed and motivated employees to be productive and engaged in work.
- Skilled at working independently and collaboratively in team environment.
- Accomplished multiple tasks within established timeframes.
- Monitored project performance to identify areas of improvement and make adjustments.
- Planned, designed, budget estimation and scheduled phases for large projects, new processes, equipments, prototypes, tooling.
- Developed Automation and Computer Vision projects for Pattern Matching, OCR Data Extraction from images.
- Developed Systems to detect in Real Time Equipment metrics as UPH, OEE, Yield, MTBA, MTBF, CPK, Downtime, Drains.
- Developed Artificial Intelligence, Machine Learning & Neural Networks projects for detecting defects on material, autonomous recognition of damage characters on PCBs.
- Developed Industry 4.0 Projects as Mobile Cars Weather Stations, Equipment Data Extraction, Communication Controls, IoT, PLCs, Management of Big Data, Simulation of PCBs Defects, Integration of different processes.
- Developed Virtual Automatic PCB defects sorting through all factory processes. This saves to company hundreds of thousands of dollars yearly by using intelligent use of processes.
- Developed Manufacturing Recipe Management for new and legacy Equipment for all Factory Processes reducing damaged material and other bad operations due manual recipe selection, saving hundreds of thousands of dollars yearly.

- Developed and Installation of SEMI E-5, E-30, E-142 Secs-Gem for Automatic Control of Equipment and integration for Cloud Recipe Management in all company processes, more than 200 equipments, saving hundreds of thousands of dollars yearly.
- Developed and Deployment of Vision Software for parallel double cameras for detecting PCBs and controlling in Real Time hundreds of systems, saving hundreds of thousands of dollars yearly.

Principal Automation Project Engineer
Skyworks Solutions, Inc.

Jan 2008 - Dec 2014
Mexicali, Baja California, México

- Skilled at working independently and collaboratively in team environment.
- Self-motivated, with strong sense of personal responsibility.
- Proven ability to learn quickly and adapt to new situations.
- Worked well in team setting, providing support and guidance.
- Assisted maintenance personnel with complex troubleshooting.
- Managed time efficiently in order to complete all tasks within deadlines.
- Maintained, debugged and optimized automation programs.
- Developed Software for Real Time Production Devices Tray Counters using image processing techniques.
- Developed Real Time Inspection Robotics Systems.
- Developed Machine Prototype of Automatic Defects Inking System.
- Developed Machine Prototype for Material Handling.
- Developed Software for Real Time Computer Vision monitoring of Production Tracking, installed over 200 equipments.
- Developed Software for Real Time Optical Character Recognition (OCR) and 2D (Data matrix) monitoring production using high resolution vision systems, installed over 200 equipments.
- Developed Software that uses Image Processing to find defects patterns in Production X-Rays images.
- Developed Machine Prototypes for Real Time Defects Inspection and Automated Ink Marking, System with 2 modules at different processes.
- Developed Machine Prototype of Real Time Defects Inspection and Laser Marking Integrated, System of 1 module. 10 systems deployed to production.
- Developed Cloud Strip Mapping defects for all Production and application to access data for each Process at factory.
- Developed Software for Real Time Production Machine Events.
- Automated Production Lines – Processes and System Upgrades from Obsolete Equipment.
- Supported Engineering and Maintenance departments with training and technical support.
- Calculated labor and material need, making necessary orders and purchases.
- Set project budgets and deadlines, delegating work according to project needs.
- Estimated materials costs and sourcing requirements for project feasibility.
- Trained staff members and improved engineering application processes.

Assistant Professor
CETYS University

Aug 2005 - Jul 2010
Mexicali, Baja California, México

- Evaluated and supervised student activities and performance levels to provide reports on academic progress.
- Helped struggling students by providing support outside of classrooms and consistently checking in on progress.
- Applied innovative teaching methods to encourage student learning objectives.
- Contributed to campus activities to promote positive university image.
- Created materials and exercises to illustrate application of course concepts.
- Collaborated with colleagues on curriculum revision, evaluation of course syllabi and lesson plans for Post Graduate Automation Studies curriculum.
- Revised course objectives, course materials, instructional and assessment strategies for Numerical Methods, Control Systems, Mechatronics, Electrical Circuits, Electromagnetism, Robotics, Digital Signal Processing, Industrial Electronics, Analog– Microelectronics Circuits, Differential Equations, Instrumentation Electronic Systems, Dynamics Physics, Computer Control, Control and Automation, Electronic Circuits, Semiconductor Physics courses.
- Supported weekly Physics, Automation, Electronics and Software lab sessions, contributing to student engagement, comprehension and learning objectives.

Research Assistant**Jan 2006 - Jun 2006****University of California, San Diego, UCSD****San Diego, California, USA**

- Performed statistical, qualitative, and quantitative analysis.
- Completed administrative and research duties per professor request.
- Planned, modified and executed research techniques, procedures and tests.
- Provided comprehensive research assistance and support when designing and executing experiments.
- Gathered, organized and entered data into simulations.
- Gathered, reviewed, and summarized literature from scientific journals such as Astrophysical Journal, Nature and produced graphs, simulations and other scientific calculations using Matlab.
- Used advanced digital signal processing, astrophysics and statistical approaches and software tools to analyze data and test hypotheses.
- Developed software for Simulation of Remote Sensing of Velocity of Double Pulsar System using Radio Scattering Observations.

Graduate Student Researcher**Sep 2003 - Aug 2005****Mexican Government Science Agency, University of California San Diego****San Diego, California, USA**

- Interpreted and analyzed research data to draw conclusions on outcomes.
- Performed routine data analysis to correct and verify data entry.
- Collaborated with academic colleagues on areas of shared research interest such as Radio Astronomy and Applied Physics.
- Managed radio scattering raw databases and input data to update records from binary pulsar systems.
- Input and modeled data to generate reports and charts for Radio Astronomy research stakeholders.
- Drafted technical papers and other documentation for use by research leadership.
- Used advanced digital signal processing, astrophysics, statistical approaches and Matlab software tools to analyze Pulsar data from Radio Telescopes and test Remote Sensing of Velocities of Double Pulsar System hypotheses.

Maintenance Support Engineer. Internship.**Jun 2004 - Sep 2004****Skyworks Solutions, Inc****Mexicali, Baja California, México**

- Skilled at working independently and collaboratively in maintenance team environment.
- Self-motivated, with strong sense of personal responsibility.
- Proven ability to learn quickly and adapt to new situations.
- Worked well in team setting, providing support and guidance.
- Identified issues, analyzed information and provided solutions to problems on floor.
- Used critical thinking to break down equipment problems, evaluate solutions and make decisions.

Maintenance Engineer**Jul 2000 - Jun 2003****Skyworks Solutions, Inc****Mexicali, Baja California, Mexico**

- Visually inspected and tested singulation equipment, performing routine preventive maintenance.
- Documented maintenance activities and confirmed compliance with relevant regulations.
- Performed troubleshooting and repair for complex electrical equipment.
- Completed partial or full dismantling of equipment to quickly repair or replace defective components and restore functionality.
- Inspected, tested and adjusted mechanical and electrical systems to facilitate proper functioning.
- Utilized variety of tools and test equipment to troubleshoot and diagnose equipment malfunctions.
- Introduced new technologies and equipments improvements to singulation process line, as Robotics and Automation.

Education**Ph.D. Sciences and Computer Engineering****Aug 2015 - Aug 2019****Autonomous University of Baja California****Mexicali, Baja California, México**

- Thesis Statement: Contributions to OCR for Unreadable Characters in Printed Circuit Boards by means of Pattern Matching and Machine Learning Techniques.
- Research at the following areas: Computer Vision. Machine Learning. Optical Character Recognition. Pattern Matching. Noisy Image Pattern Recognition. Artificial Intelligence.
- Deliverables: 2 US Patents, 2 Publications at IEEE International Conferences on Artificial Intelligence.

Master of Science: Electrical and Computer Engineering, Applied Physics

Aug 2003 - Jun 2006

University of California, San Diego, UCSD

San Diego, California, USA

- Worked on the modeling of theoretical – simulation studies of the interaction of radio waves from Pulsars, Solar Wind, propagating through the interstellar turbulent media.
- Thesis Statement: Remote Sensing of the Velocity of a Double Pulsar using Radio Scattering Observations.
- Deliverable: 1 Publication at The Astrophysical Journal.

Bachelor of Science: Electronic Cybernetics Engineering

Aug 1996 - Jun 2000

CETYS University

Mexicali, Baja California, México

- Degree Awarded with Honors in Automation and Control Area.

Certifications

- Certified Six Sigma Black Belt (CSSBB), Cetys Universidad, 2022.
- Certified LabVIEW Associate Developer, National Instruments (NI), 2016.
- Certified Project Management, ITESM, 2010.

Accomplishments

- Conacyt Grant - Mold Brand Integration Project, Jan 2010, over \$100,000 DIs for the Integration Prototype Machine. Skyworks Impact: Automate Manual Inspection (Computer Vision, Pattern Matching, Image Processing), Two processes at the same place (Machine Integration), Real Time Brand Quality Inspection (Computer Vision).
- UCSD Graduate Scholarship, Jan 2006, Research Assistant.
- Conacyt Graduate Scholarship, Aug 2003.

Patents

- Systems and Methods for Recognition of Unreadable Characters on PCBs, US 10,255,513 B2, Issued Apr 9, 2019.
- Detecting Potentially Defective Packaged Radio-Frequency Module, US 10,109,047 B2, Issued Oct 23, 2018.
- Optical Character Recognition on Printed Circuit Boards, US 62/344,624. Filed Jun 2, 2016.
- Método Automatizado de Inspección para la detección de Defectos Superficiales sobre Superficies Circulares de Cilindros Cerámicos, MXE2015049502, Filed Jun 22, 2015.
- Método de Reconocimiento Óptico Automático de Caracteres Dañados en Tableros de Microcircuitos a través de Fragmentación de Partículas, MXE2015003173, Filed Jan 9, 2015.
- Automated detection of potentially defective packaged radio-frequency modules, US20140119636 A1, Issued May 1, 2014.
- Systems and methods for processing packaged radio-frequency modules identified as being potentially defective, US20140119637 A1, Issued May 1, 2014.

Publications

- OCR for Unreadable Damaged Characters on PCBs using GSC Algorithm and K-NN Classifier, IEEE, International Conference on Artificial Intelligence, ICAI16, Jul 27, 2016.
- OCR for Unreadable Damaged Characters on PCBs Using Principal Component Analysis and Bayesian Discriminant Functions, IEEE, International Conference on Computational Science and Computational Intelligence 2015, CSCI15, Dec 7, 2015.
- Automatic Image Inspection Method for Detection of Superficial Defects on Circular Top Sides of Cylindrical Ceramic Rods, IEEE, International Symposium on Industrial Electronics 2015, ISIE15, Jun 3, 2015.
- Interstellar Scintillation of the Double Pulsar J0737-3039, The Astrophysical Journal, May 15, 2014.
- Automated X-OUT Systems: Prototypes, Processes Integration and Map Virtualization, Skyworks 2014 Technical Conference, May 13, 2014.
- Mold – Brand Processes Integration Prototype, Skyworks 2010 Technical Conference, Jun 7, 2010.

Languages

Spanish Bilingual or Proficient (C2)

English Advanced (C1)