

# LUIS MIGUEL ZABALA GUALTERO

A committed professional with a solid background in mechanical and mechatronic engineering. My time in research area has taught me the value of working as a team member towards the same goal, and has given me experience in personnel and resource management. At the same time, it has allowed me to improve techniques and standardize new ones. I am very motivated and open to new knowledge.

55 1898 9959

luismizaba@hotmail.com

<https://www.linkedin.com/in/luismizaba>

Nationality: Colombian  
Mexico City

Available to travel

## Education

- 2018 – 2022 • **PhD in Engineering | Specialty in plastic materials science and software**  
Tecnológico de Monterrey | Campus Estado de México
- 2016 – 2017 • **Master in Automotive Engineering | Specialty in plastic materials science and software**  
Tecnológico de Monterrey | Campus Toluca
- 2010 – 2015 • **Bachelor in Mechanical Engineer | Specialty in automation and software**  
Universidad Industrial de Santander | Bucaramanga, Colombia

## Work Experience

- 2022 • **Intermediate HiL Engineer | P3 Group**  
Modeling Engineer with different development tasks, review and correction of models for testing vehicles through CAN communication
- 2018 – 2022 • **Research PhD Student | Tecnológico de Monterrey**  
*Research project: Rapid crack propagation in engineering thermoplastics*  
Designer of semi-complex mechanical and control systems integrating hardware and software · Developer of graphical user interface for the use of a machine that measures the performance of rapid crack propagation in thermoplastic pipes · Content generation, subject qualification, tutorial assistance to students and professor of courses for manufacturing laboratories, numerical simulation with the finite element method, language coding, Siemens PLC programming, heat transfer and magnetism
- 2016 – 2017 • **Research Scholar | Tecnológico de Monterrey, CIMA**  
*Research project: Instrumentation and validation of a team of tensile-impact test for engineering plastics*  
Designer of mechanical and control systems integrating hardware and software · Developer of graphical user interface for the use of a characterization machine for plastic materials subjected to high-speed · Responsible for coordinating the materials and equipment of the Automotive Mechatronics Research Center (CIMA) in the area of materials science · Responsible for the characterization of materials in destructive and non-destructive tests · Content generation, subject qualification, tutorial assistance to students and professor of courses for materials science laboratories and Siemens PLC programming
- 2014 – 2015 • **Laboratory manager | Universidad Industrial de Santander, LabAI**  
*Research project: Design of a prototype for the generation of electric power based on a stationary bicycle*  
Responsible for coordinating automation equipment and test benches for students · Content generation, tutorial assistance to students and auxiliary professor of industrial automation subjects

## Skills

### SKILL HIGHLIGHTS

- Fast learner
- Analytical
- Team-worker
- Good attitude
- Committed

### LANGUAGES

Spanish | Native  
English | B2

Programming languages: C++, .NET, .VB, SQL, MatLab, LabVIEW, Arduino

PLC Software: TIA Portal, SIMATIC, Tecnomatix

CAD Software: SolidWorks, Fusion, NX

CAE Software: ANSYS, Moldflow, LS-Dyna, Hypermesh

CAM Software: HSM Works, CAM Works, CIMCO, Mastercam

Material Software: CES EduPack

MS Office, Minitab, FMEA

## Projects

---

- 2021 ● VALTIC, Tlaxcala. Characterization of rapid crack propagation phenomenon in PE 4710 pipe. My participation in this project was the supervision and management of the realization of S4 test to measure the rapid crack propagation phenomenon in PE 4710 thermoplastic pipe developed by Valtic. The execution of the project, data processing, modeling of the phenomenon and documentation was carried out by me. I led four engineers who were in charge of the experimental and manufacturing processes.  
BASF, Mexico City. Plastic bottle design in plastic injection molding. Mechatronics and mechanical engineering students in their final semester carried out the designs and simulations of the plastic injection mold. My participation in the project was the supervision and advice of the design and manufacture of the two injection molds for plastic bottles in order to test a material developed by BASF.
- 2020 ● BASF, Mexico City. Complex fixtures design in plastic injection molding. Mechatronics and mechanical engineering students in their final semester carried out the designs and simulations of the plastic injection mold. My participation in the project was the supervision and advice of the design and manufacture of the two injection molds for complex propeller in order to test a material developed by BASF.
- 2017 ● SENER, Mexico City. Electric car for Mexico City. My participation in the electric car for Mexico City in collaboration with the Secretary of Energy of Mexico was in the control of the lithium batteries of the vehicle.  
MOLDEX, Lerma. Numerical simulation of mechanical vibrations in connection wire. My participation in the project was in the numerical simulation of the structural part of a plate type component for the connection of wires, and of the part of mechanical vibrations in the six different modes of electric power wires.
- 2016 ● GESTAMP, Toluca. Automatic control to verify torque on locknuts welded to supports. I led a team of five engineers who were in charge of different project tasks such as experimental tests, 3D modeling and the implementation of the Taguchi model. The numerical simulations of the spot welding process that considers three parts: thermal, structural and electrical, the selection of new materials to optimize the process and the project management were carried out by me.  
GENERAL MOTORS, Toluca. Characterization of composite materials for car front door panels. My participation in the project was the supervision of a group of automotive engineering students for the characterization of the mechanical properties of panels of a composite material of fiberglass and a resin in collaboration with the PACE program.  
PLASTIGLAS, Mexico City. Comparative study of material properties in cores and laminates. The documentation of the project, the information process and the manufacturing processes were carried out by three engineers that I led. The characterization of mechanical properties of materials developed by Platiglas, information processing and project management was in my charge.

## Scientific Publications

---

- 2020 ● Modification of Charpy machine for the acquisition of stress-strain curve in thermoplastics
- 2017 ● Virtual laboratories: tools to develop skills at designing automatism in engineering students  
Remote laboratory for the realization of industrial automation practices  
Computer simulation of spot welding process: Using ANSYS workbench in a multiphysical approximation  
Construction of a virtual reality machine: A didactic tool for engineering students
- 2016 ● Light following robot with two degrees of freedom to replace photovoltaic panels
- 2015 ● Electric energy generation and storage prototype