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Contact Information:	studyinmexico@itesm.mx

Undergraduate Research Program	
Project Name	Modification and adaptation of an electric vehicle to an autonomous platform for testing algorithms and sensors
Campus & Location in Mexico	Ciudad de México
Faculty	Engineering
Research Area	Robotics
Research Responsible	Javier Izquierdo Reyes
Description of the Project	<p>This project seeks to convert an electric ClubCar into a platform instrumented with sensors and computational resources that allow autonomy tests within the Mexico City campus of Tecnológico de Monterrey.</p> <p>Since the platform has very basic mechanics and electrical systems, it is necessary to solve some problems and perform essential maintenance before instrumenting the vehicle.</p> <p>As a first phase, the vehicle's steering system needs to be converted from a purely mechanical to an electromechanical system. So, it is necessary to generate gears that can manipulate the steering by using an electric motor. Similarly, the braking system must also be converted to electronic to be safe when operating the vehicle manually or autonomously.</p> <p>Currently, the platform is already in place on the Mexico City campus. In addition, there have the corresponding dynamic models and CADs and a motor previously used in a steer-by-wire direction. So, the mission of the project participants will be to analyze the steering mechanism to generate the system that best suits the vehicle. Furthermore, the best option will be sought on the braking system, and the necessary adjustments must be made for its installation in the Club car.</p> <p>For the January-June semester, it is expected to have an electromechanically adequate platform to be controlled electronically by a human (remote control or cable control) so that the sensors and computer systems can effectively control the vehicle.</p>
Training Provided	Academic manuscript development;International collaboration networks;Prototype development

Modality	In Person
Offered During	Semester

Student	
Tasks/Responsibilities	<ul style="list-style-type: none"> - Collaborate with local students - Analyze the mechanisms to generate the system that best suits the vehicle for steering and for braking
Required Language Proficiency	Spanish (Basic);English (Medium);English (Advanced)
Required Skills and Abilities	experience in the area of design, simulation, and manufacturing. Basic knowledge of electrical circuits
Other Documents Required to APPLY for an Internship	<ol style="list-style-type: none"> 1) Being at least in your 2nd year of bachelor 2) Accumulative grade point average (GPA) 2.5 3) Official Transcript 4) 2 letters of recommendation of faculty members 5) Resume 6) Letter of intention explaining the reason why you would like to participate in the research program