

Objective

To design, build and install a dynamic spoiler in the Formula SAE Race Car which FIU will be taking next May to the Formula SAE competition in Michigan.

Technical Details

How well we manage the relative motion between the vehicle and the medium that it's moving through will determine what aerodynamic loads it's subject to.

Background

The formula SAE Team (Panther Motorsport) has expressed their excitement about this project for two major reasons. An innovative aerodynamic solution will provide the team with an advantage against the competition since we can maximize the benefits of a spoiler while minimizing its disadvantages. A design and innovativeness competition running parallel to the performance competition, having such an original system installed will give the team the lead.

Project Goals

Minimizing the drag on straights and maximizing it when the car is braking, as well as maximizing the down force on the tires when the car is turning.

Apparatus



Dynamic Spoiler

Materials



Spoiler



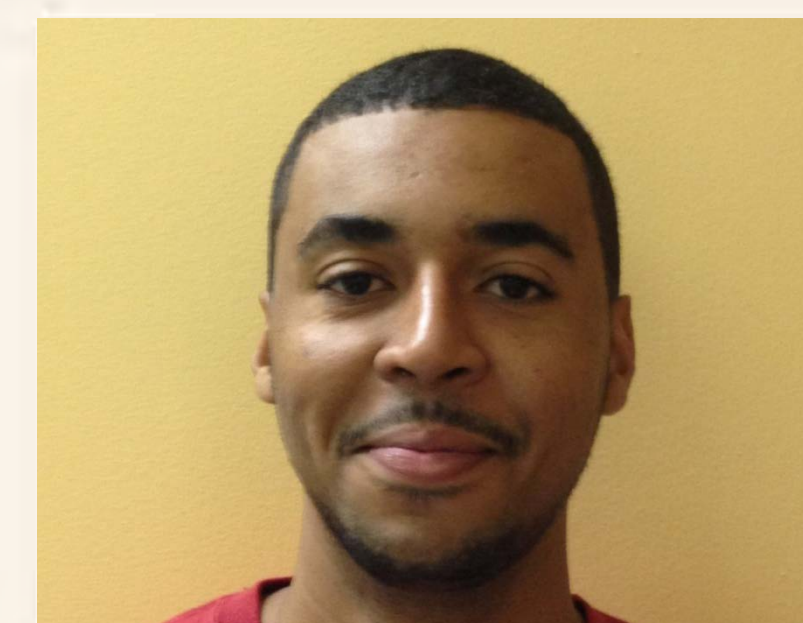
Electrical Components



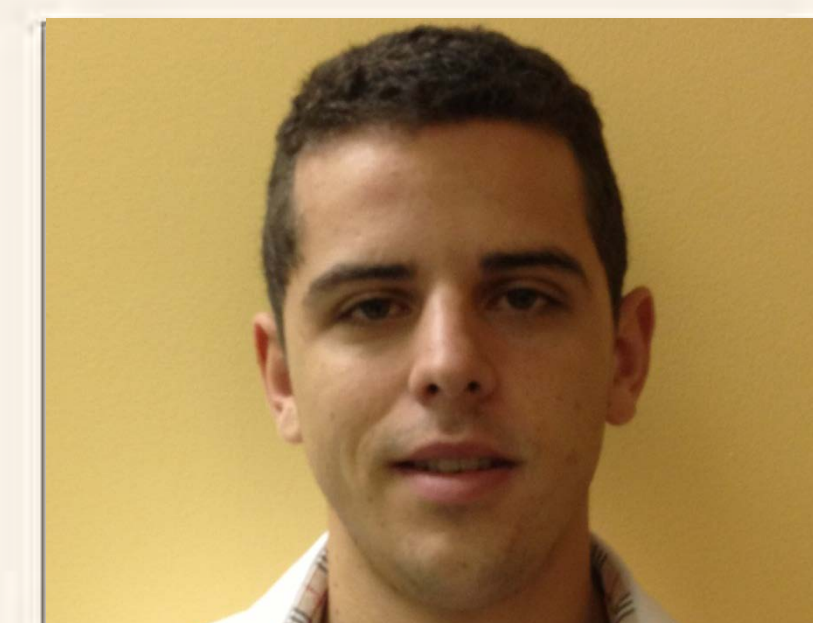
Spoiler Mount



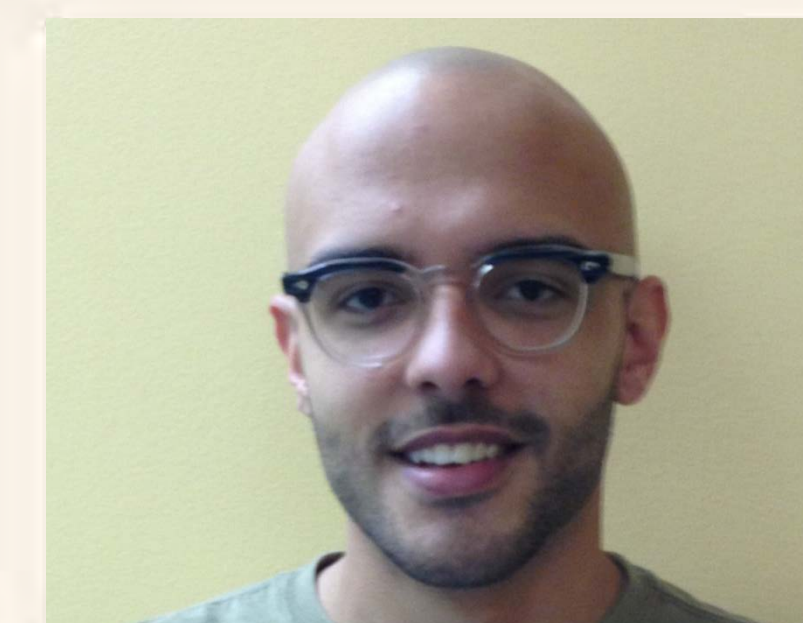
Actuators



Brent Loughheed



Adrian Ortuño Crespo



Richard Pelaez

Advisor: Dr. Andres Tremante

Progress to Date

- Research spoiler design.
- Choose components for electrical system.
- Run Simulation on different airfoils.
- Compute dynamic formulation for the spoiler.

Acknowledgments

Andres Tremante
Benjamin Boesl
Igor Tsukanov
Ju Sun

Ibrahim Nur Tansel
Society of Automotive Engineers
Florida International University
Sun Life Stadium

Timeline

| | 20-Aug | 27-Aug | 3-Sep | 10-Sep | 17-Sep | 24-Sep | 1-Oct | 8-Oct | 15-Oct | 22-Oct | 29-Oct | 5-Nov | 12-Nov | 19-Nov | 26-Nov | 3-Dec | 10-Dec | 17-Dec | 24-Dec | 31-Dec | 7-Jan | 14-Jan | 21-Jan | 28-Jan | 4-Feb | 11-Feb | 18-Feb | 25-Feb | 4-Mar | 11-Mar | 18-Mar | 25-Mar | 1-Apr | 8-Apr | 15-Apr | 22-Apr | 29-Apr | 6-May | 13-May | 20-May | 27-May | | | | | | |
|--------------------------|--------|--------|-------|--------|--------|--------|-------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|-------|-------|--------|--------|--------|-------|--------|--------|--------|--|--|--|--|--|--|
| Project Formulation | █ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Design Alternatives | | | █ | █ | █ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proposed Design | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Design and Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SolidWorks Modeling | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Part List/ Cost Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prototype Construction | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prototype Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Team Poster | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prototype Organization | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Report Preparation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Presentation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Competition | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Competition

- Formula SAE® Michigan