

Development of a Formula SAE Body



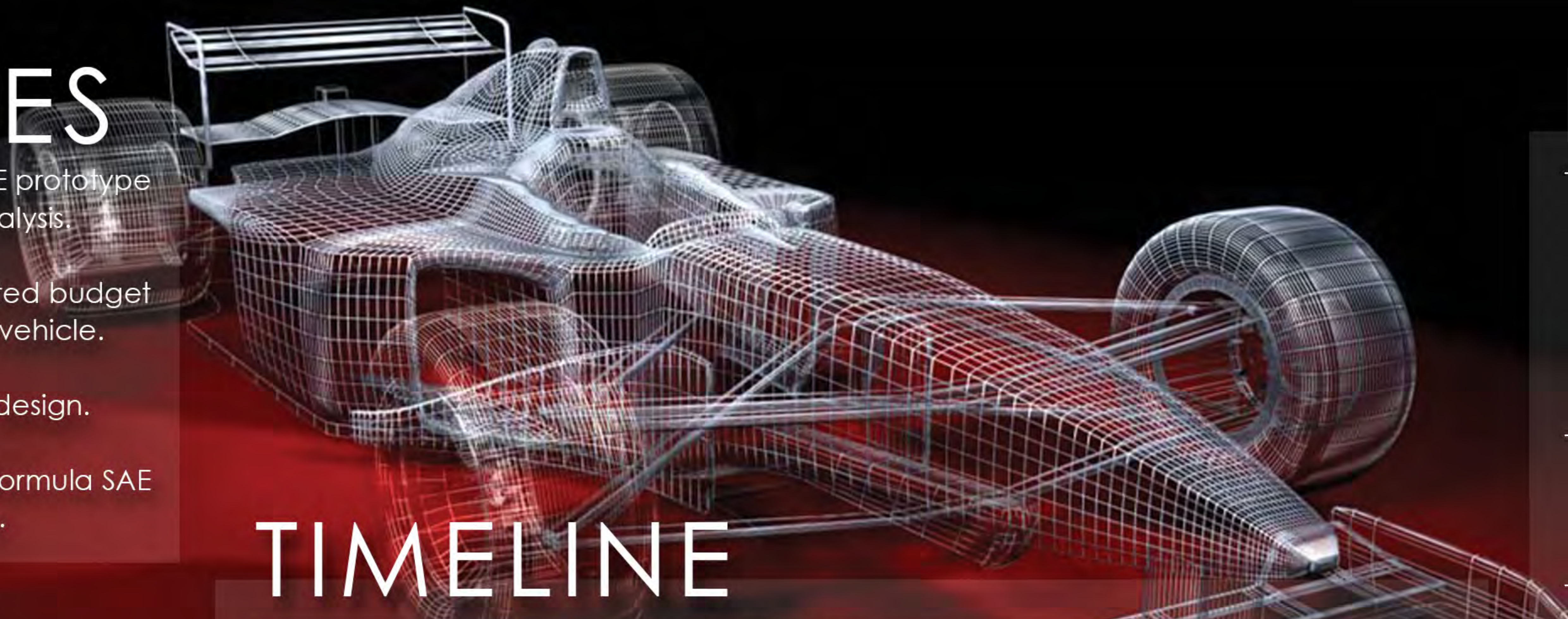
Advisor:
Prof. Andres Tremante
Special Thanks:
Prof. Benjamin Boesl
Walter McKinley

MOTIVATION

- Based on the results of last year's competition, one of the major proposed improvements for the upcoming prototype is body design.
- By approaching this task as a Senior Design Project, it would allow for better and more in-depth analysis that would yield an optimal design.
- Advanced concepts from different fields of engineering are applied, such as: Fluid Dynamics, Structural Analysis, Mechanics of Materials and Computer Aided Design.

OBJECTIVES

- To develop a body for the new FIU-SAE prototype racecar with the proper studies and analysis.
- To be able to accommodate our limited budget while maintaining a highly competitive vehicle.
- Optimize previous racecar prototype design.
- To be able to participate in the 2013 Formula SAE Competition held in Brooklyn, Michigan.



PROCESS

- Design Phase
 - Rough Sketch Rendering
 - Modeling of Vehicle Body
 - Several Iterations of Shapes and Sizes
 - Final Design Rendering and Optimization
- Testing Phase
 - CFD and Structural Analysis
 - Result-based Iterations
 - Physical Body in Wind Tunnel
- Manufacturing Phase
 - Mold Assembly
 - Layering of Carbon Fiber Fabric
 - Resin Saturation
 - Vacuum Seal
 - Mold Removal for Final Product Reveal

TIMELINE

	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Literature Survey	█								
Senior Poster		█							
10% Report		█							
25% Report		█							
Design	█	█	█	█					
Research	█	█	█	█					
Rough Sketch	█	█	█	█					
Conceptual Design	█	█	█	█					
1st Iteration Model	█	█	█	█					
Testing					█	█			
CFD and Structural Analysis					█	█			
Result-Based Iteration Model					█	█			
Manufacturing							█	█	█
Mold Development							█	█	█
Fiber Sheets Layering							█	█	█
Finishing							█	█	█
Experimental Testing								█	█
Competition									█

RESPONSIBILITIES

	DESIGN	ANALYSIS	MANUFACTURING	REPORTS	PRESENTATIONS
JAVIER GUTIERREZ	█			█	█
DIEGO QUINTERO		█		█	█
ANGEL NUNEZ			█	█	█

TEAM



Angel Nunez



Diego Quintero



Javier Gutierrez