**Project 2: Enduro Student India**

**Duration:** 20th November 2018 – 8th March 2019

During this event, I was promoted to the role of **Team Lead for Powertrain, Drivetrain, Brakes, Vehicle Dynamics, Testing, Quality Assurance, Pit-Stop, and Detailing**. I led a team of twelve members and was responsible for ensuring that all systems worked cohesively to meet the demanding requirements of the competition.

After the successful completion of **SAE BAJA**, I was selected to lead the team for the next major event — **Enduro Student India**, held in Pune, Maharashtra, from 14th to 19th February 2019.

**Vehicle Damage and Redesign**

Our vehicle had sustained significant damage in the previous event. The steering rack and front side roll cage were severely affected, along with partial damage to the rear side. To prepare for the Enduro Student India event, we had to carry out essential modifications.

My primary responsibility was to coordinate with all departments and guide dynamic changes. The first step was to cut away the damaged roll cage sections and redesign them. This task was challenging because we had to fabricate a **new frame within the constraints of the existing chassis**. Using AutoCAD and CATIA, we managed to redesign and successfully fabricate the updated structure, though it proved to be highly complex in execution.

Additionally, I reinforced the chassis by adding more frame supports to the roll cage. As the Head of Quality Assurance, my objective was to minimize potential vehicle damage and increase reliability. These reinforcements made the chassis **stiffer, stronger, and more durable** while still adhering to the design rules.

**Testing and Driver Training**

The redesign was completed just a week before the event, which left us with only five days to prepare. Once the chassis was repaired, I selected and trained new drivers with strong off-road skills. To prepare them, I constructed a **test track inside my university**, replicating real-world off-road conditions by adding obstacles such as stones, wooden blocks, and muddy patches.

We subjected the vehicle to rigorous durability testing, including simulated rollovers, load tests on the chassis top, drag runs, and jumps from a height of **4 feet**. This allowed us to evaluate the strength of the redesigned chassis and ensure readiness for the event.

In parallel, I trained team members in **pit-stop operations**, focusing on tire changes, refueling, brake inspections, and suspension checks. Our target was to complete all tasks within 10 seconds. Initially, the team struggled, often exceeding 15 seconds, but through structured training and task delegation (assigning groups to specific responsibilities such as refueling, suspension checks, and chassis inspection), we successfully optimized the process.

**Transportation Challenges**

Transporting the vehicle to Pune presented another challenge. We left on 11th February, dismantling the vehicle for train transport. Prior arrangements had been made to find a workshop in Pune where the vehicle could be reassembled. Upon arrival, the team worked intensively to restore the vehicle, ensuring it was ready for technical inspection and dynamic events.

**Sponsorship and University Coordination**

Apart from the technical aspects, I also took charge of securing sponsorships and university approvals. I obtained special permission from the Head of Department to miss classes and dedicate myself fully to preparation. To support event costs, I negotiated with sponsors by promoting their brands on our T-shirts and vehicle livery. This not only helped reduce financial pressure but also strengthened our professional exposure.

**Academic Continuity**

Since this was a **national-level event**, my Head of Department provided full academic support. I, along with my team, was permitted to miss regular classes during the preparation and competition phase. After the event, the university arranged **special extra lectures** exclusively for us. This ensured that neither I nor my teammates faced any academic loss, and we were able to balance both academics and project responsibilities successfully.

**Disclaimer**

Due to the **patented nature of the chassis design**, I am unable to upload or share AutoCAD and CATIA models used in this project. The design remains active and protected under intellectual property rights.