CONCEPT Dynamic testing simulation is a computational approach to model and analyze the motion of mechanical systems in a dynamic environment. It involves creating a virtual prototype of the system, which is then subjected to various real-world scenarios such as impacts, vibrations and other external forces. The simulation software uses mathematical models to calculate the system's motion, forces and accelerations, allowing engineers to predict and optimize its behavior before it is physically built. This approach is useful for testing the performance of complex systems in a safe and controlled environment, reducing the need for costly and time-consuming physical prototypes.

APPLICATION

Vehicle crash testing is a great example of dynamic testing simulation. Crash test dummies are subjected to simulated accidents to measure the human body's response to deflections, forces and inertia generated during the test, accelerations and impacts. Some typical tests include:

- Overlap frontal collisions
- Side Impact collisions
- Rear Impact collisions
- Seat belt testing
- Frontal and Side Airbag testing
- LATCH testing for child seats

Questions are being raised as to what happens to the passengers of an autonomous vehicle involved collisions. These passengers will be seated in non-traditional positions and might not be aware of their surroundings. Situational awareness has decreased as we become more immersed with cell phones, portable video game systems and headphones. This increases the challenge of simulating how the human body will react during this type of crash.

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