

Mini Car Design Challenge



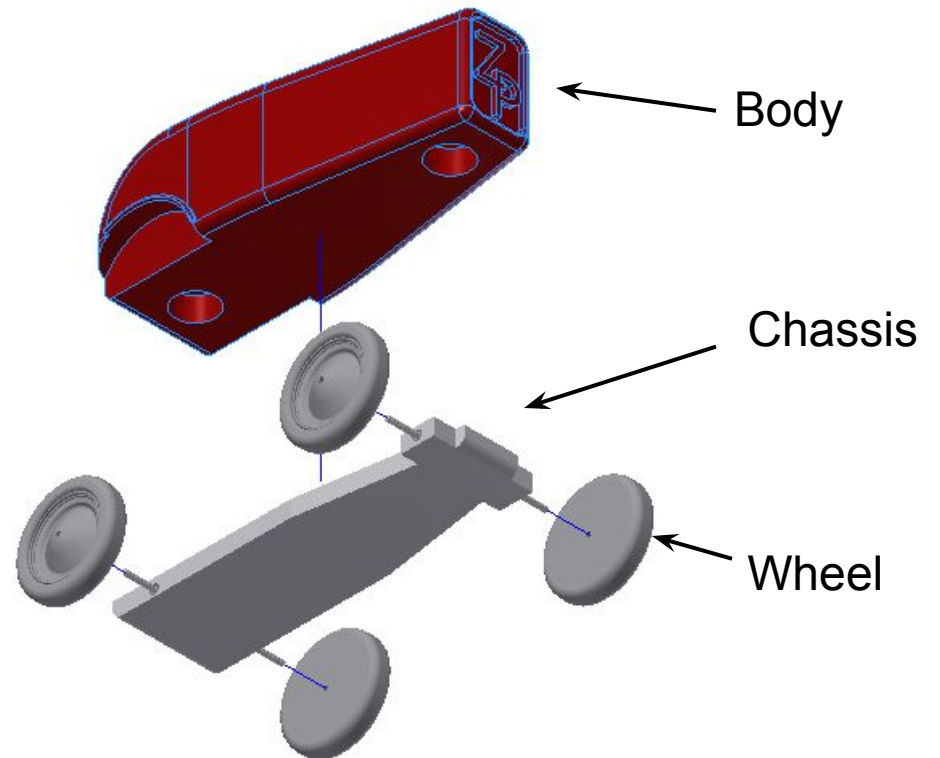
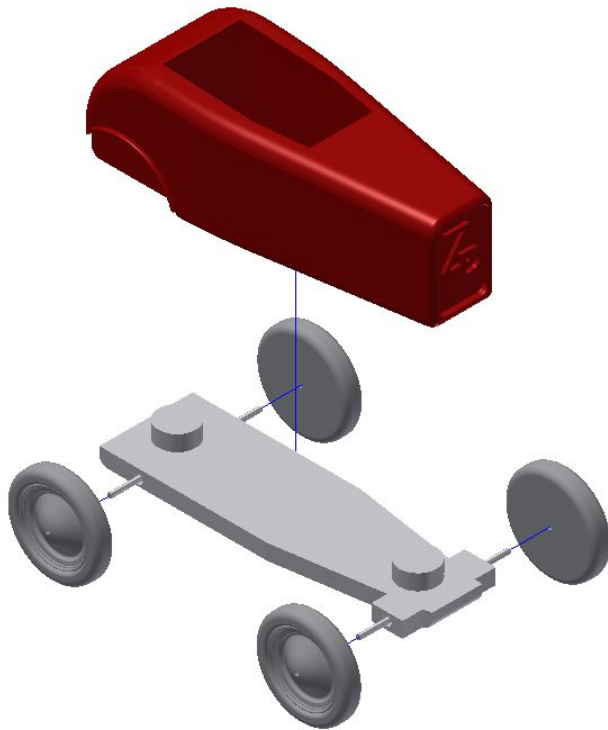
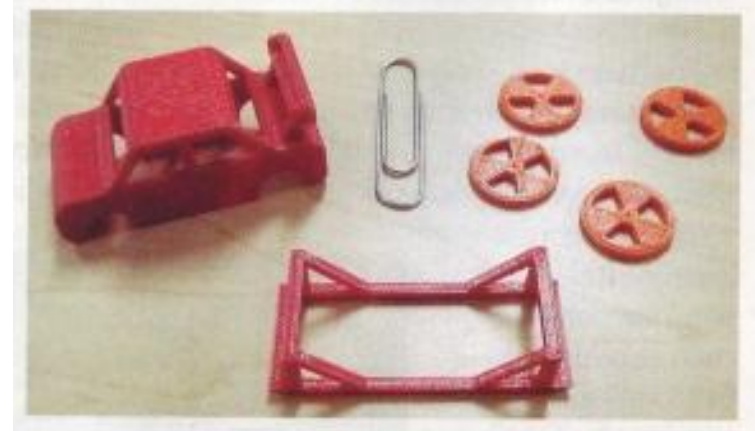
calculate, assemble, create, and construct this project. They earn points correlated to the distance their mini car can travel down a 5' foot section

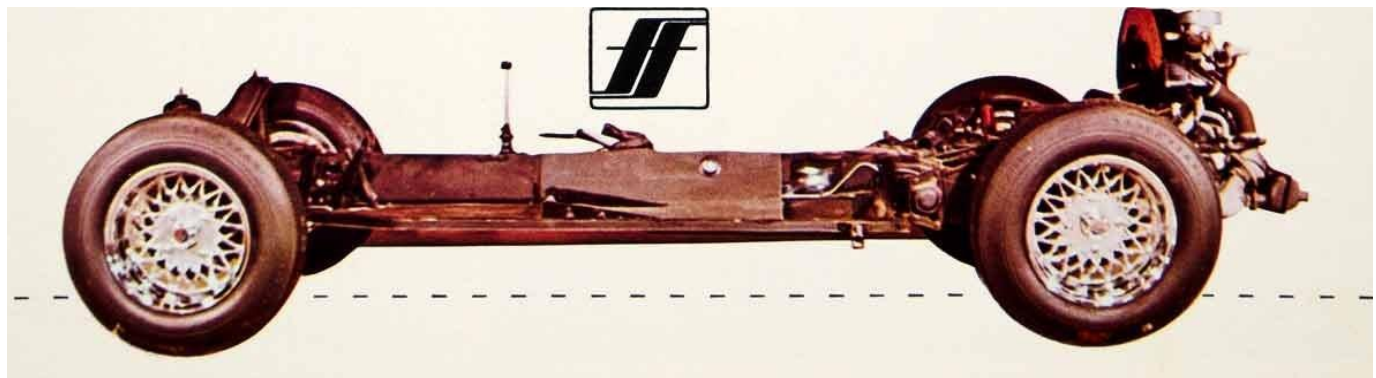


Four student-designed mini cars. The car at top right uses dimes for added weight, the lower right car uses quarters.

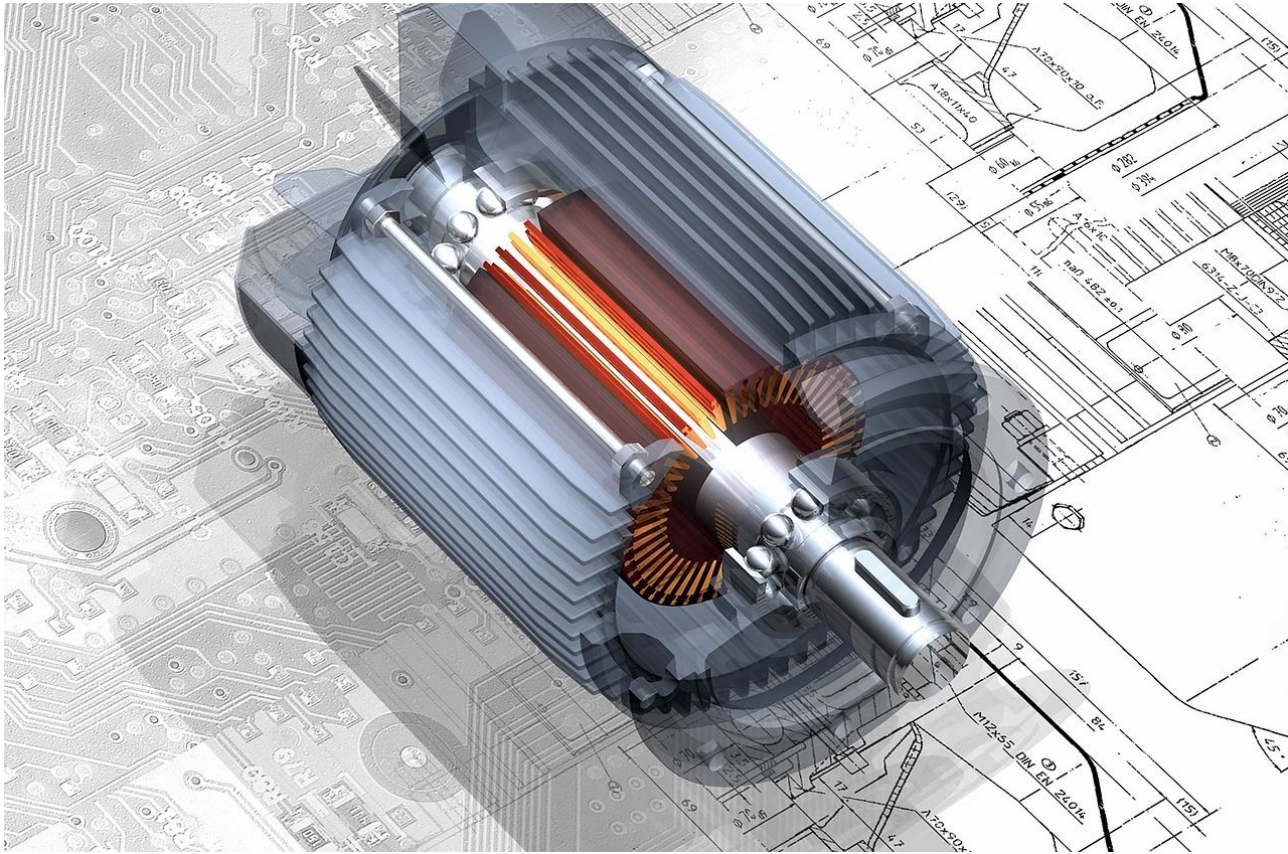


Car Parts









Reverse Engineering and Functional Analysis

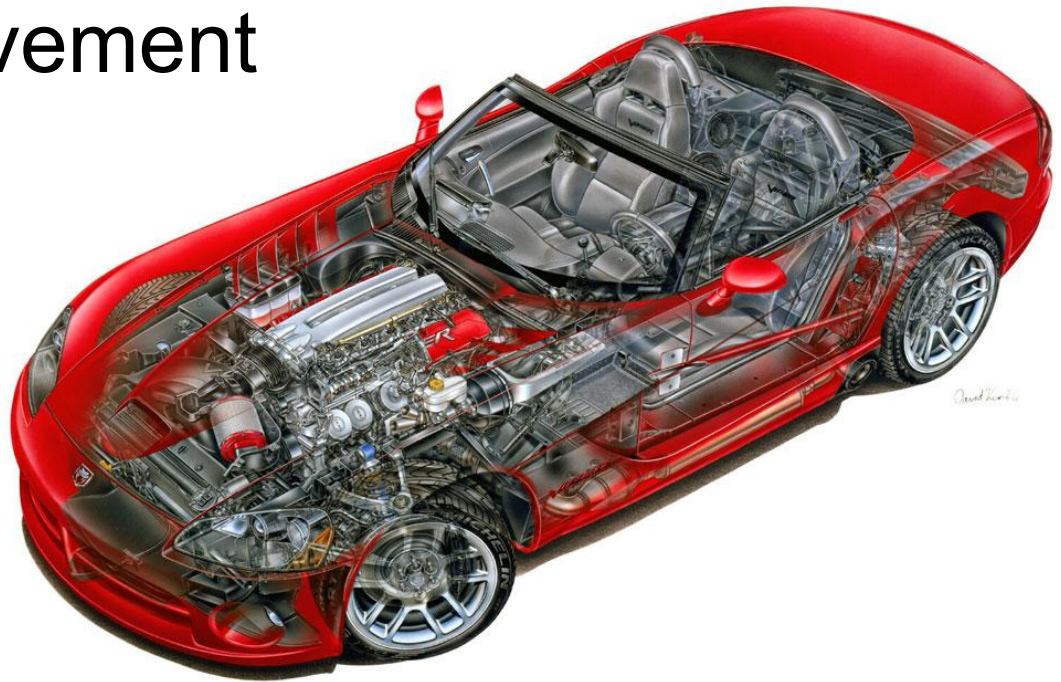
WHAT is Reverse Engineering?

Reverse engineering is the process of taking something apart and analyzing its workings in detail, typically with the purpose of understanding its function, operation, and structure.



WHY is Reverse Engineering Used?

- Documentation
- Discovery
- Investigation
- Product Improvement



WHY is Reverse Engineering Used?

- Documentation
 - No existing documentation
 - Interoperability
 - Maintenance



WHY is Reverse Engineering Used?

- Discovery
 - Academic/research/learning
 - Curiosity

Reverse-engineer the brain



Human Genome Project



WHY is Reverse Engineering Used?

- Discovery
 - Academic/research/learning
 - Curiosity
 - **Military or commercial intelligence**



F-16 Fighter Jet



WHY is Reverse Engineering Used?

- Investigation
 - Analysis and testing
 - Document patent infringement
 - Forensics: Design failure



WHY is Reverse Engineering Used?

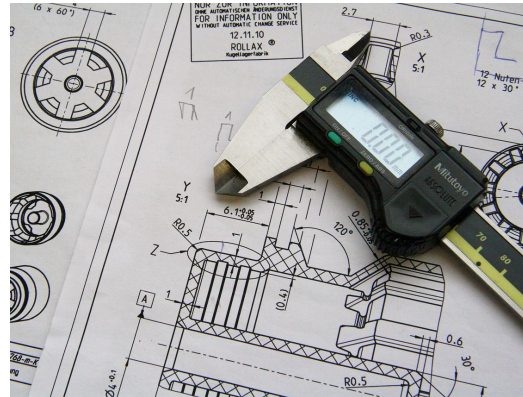
- Improve or redesign a product
 - Increase efficiency
 - Improve reliability
 - Improve manufacturing techniques
 - Eliminate failure mode
 - Reduce cost
 - Increase ease-of-use
 - Reduce negative environmental impacts
 - Recycle parts
 - Etc.

Reverse Engineering Tools

Micrometers



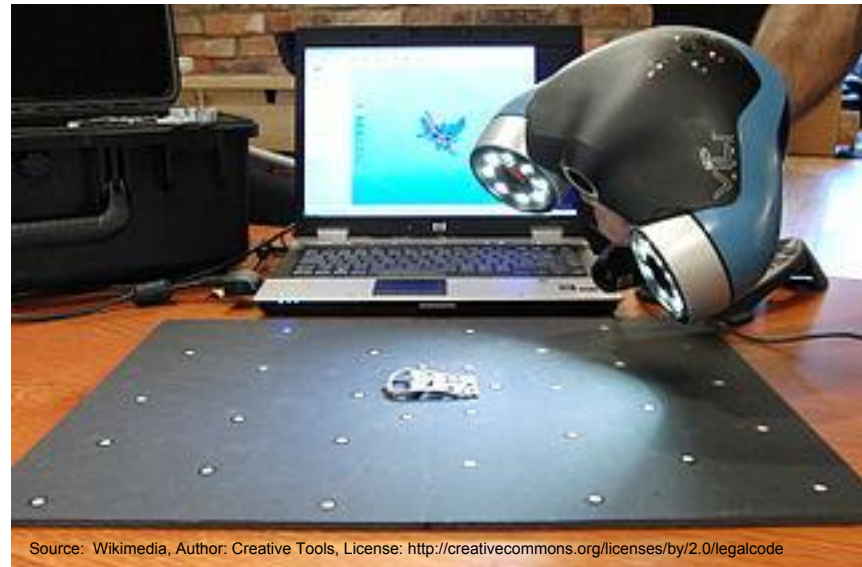
Caliper



Optical Probe



Handheld 3D Laser Scanner



Medical Imaging

