Machine Lab Spring'24

Leonardo Da Vinci

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Introduction

Leonardo DaVinci(1452-1519) is:

- Painter
- Draftsman
- Sculptor
- Architect
- Engineer
- Renaissance humanist Ideal

Part 1: Artistic Achievements

Part 2: The Scientist

Part 3: The Great Inventor

Early Life and Background

Raised and studied in Florence, Italy, Leonardo da Vinci's early artistic talent emerged at 15 when apprenticed to Andrea del Verrocchio, renowned for a multifaceted training encompassing painting, sculpture, and technical-mechanical arts, while his pursuit of advanced mathematics began at 30, reflecting his diligent tenacity.

DaVinci-The artist

Mona Lisa

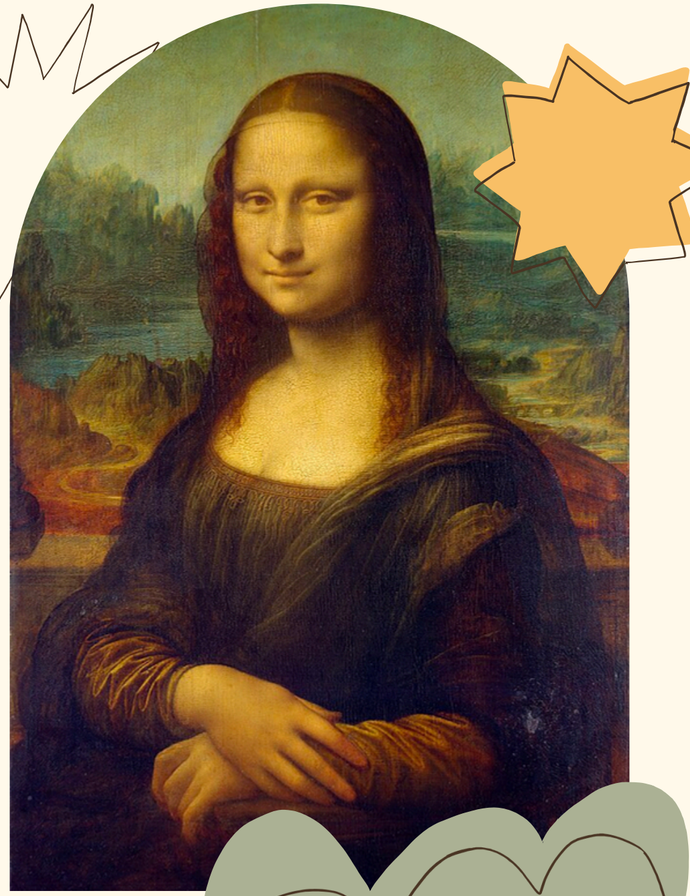
The Last Supper

The Annunciation

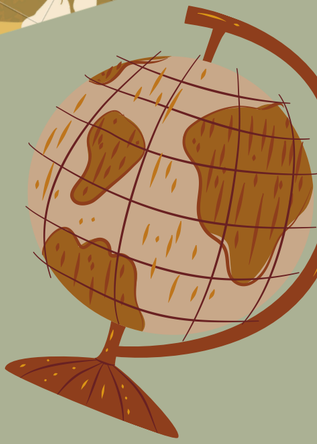
Realism through Observation

Open Window Perspective

The Golden Ratio



DaVinci-The Scientist



Optics and Vision

Anatomy

Mathematics

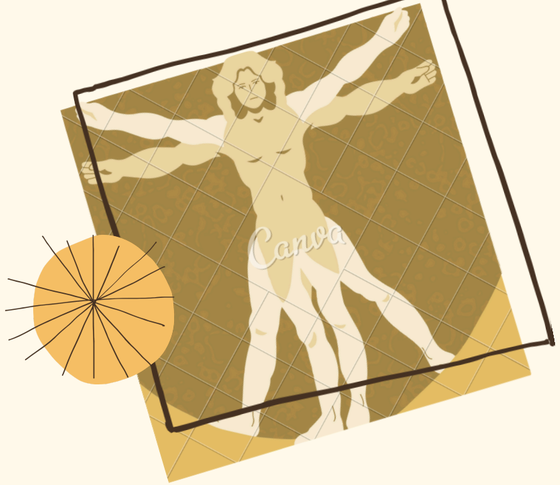
Geology

Fluid Mechanics

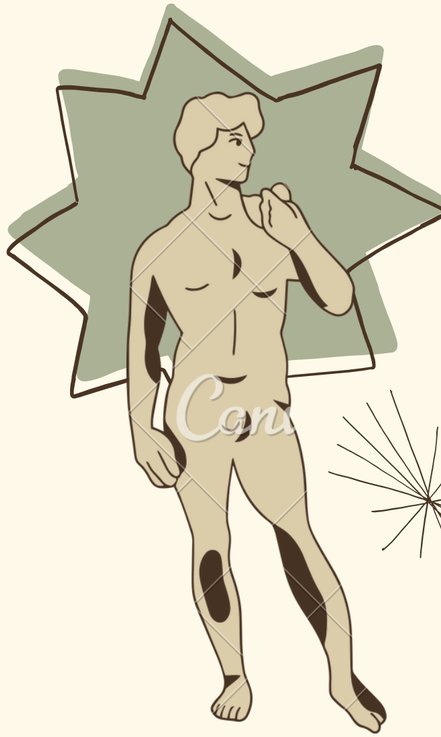
Botanical

Botanical

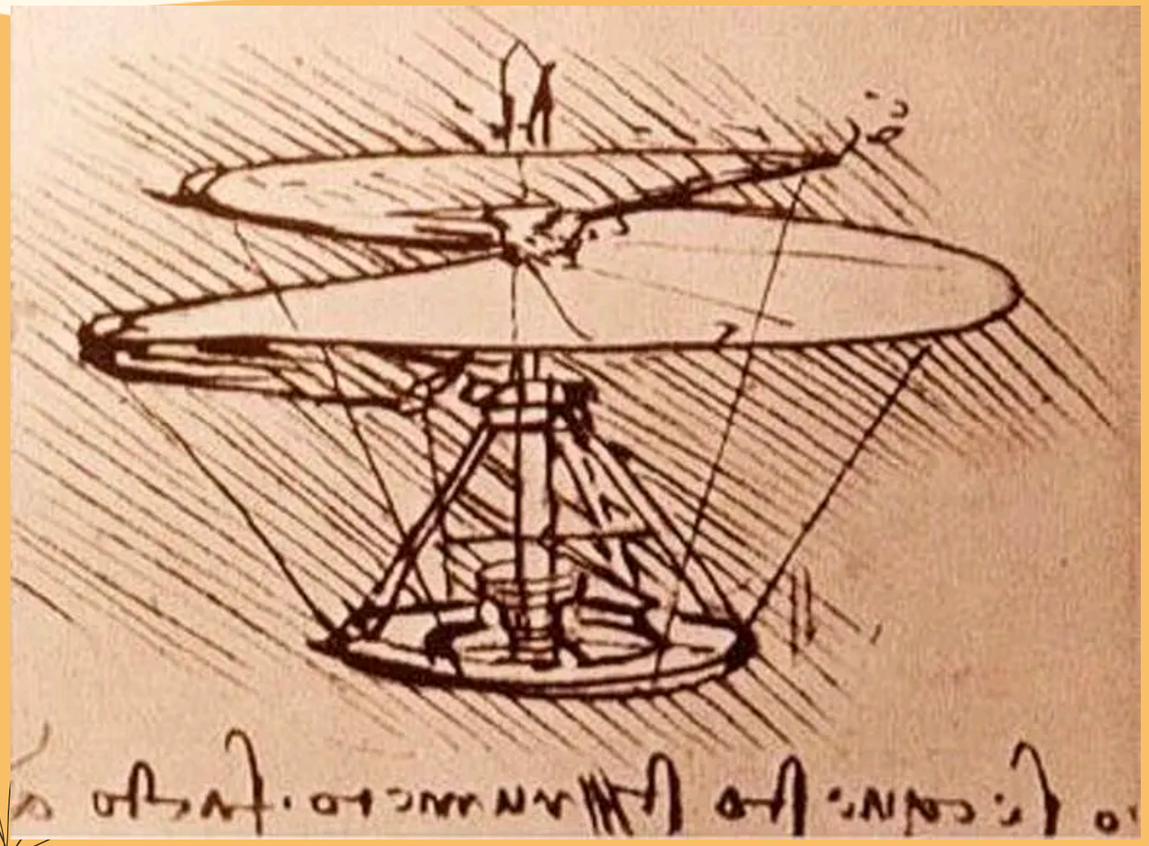
Hydrodynamics



The Great Inventor

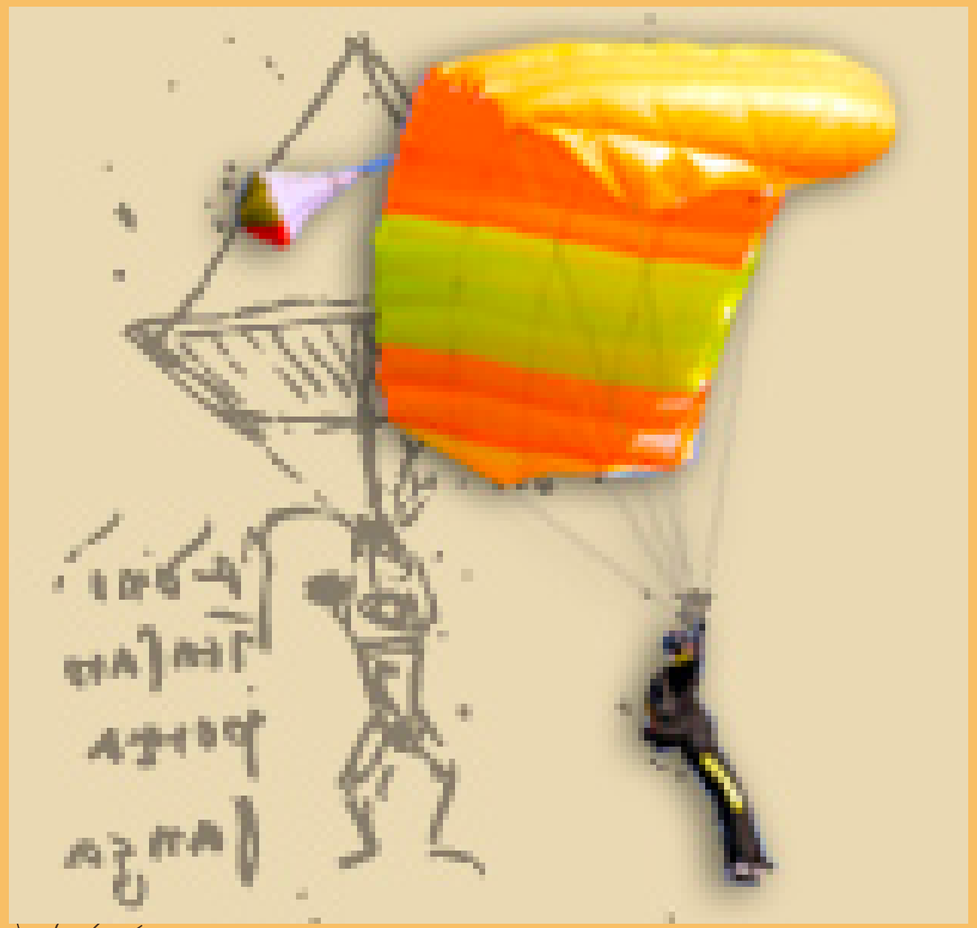


Helicopter(Aerial Screw)



One of the more famous Leonardo da Vinci inventions, the design for the aerial screw, was made by him during the 1480s.
The early renditions of Leonardo da Vinci's flying machine were the part of the manuscript which dates back to 1487 and 1490.
This pen and ink sketch shows an outline of a flying machine with a similar functioning to modern helicopters. It is based on the design of a water screw, but instead of pushing against water, it does the same with air.

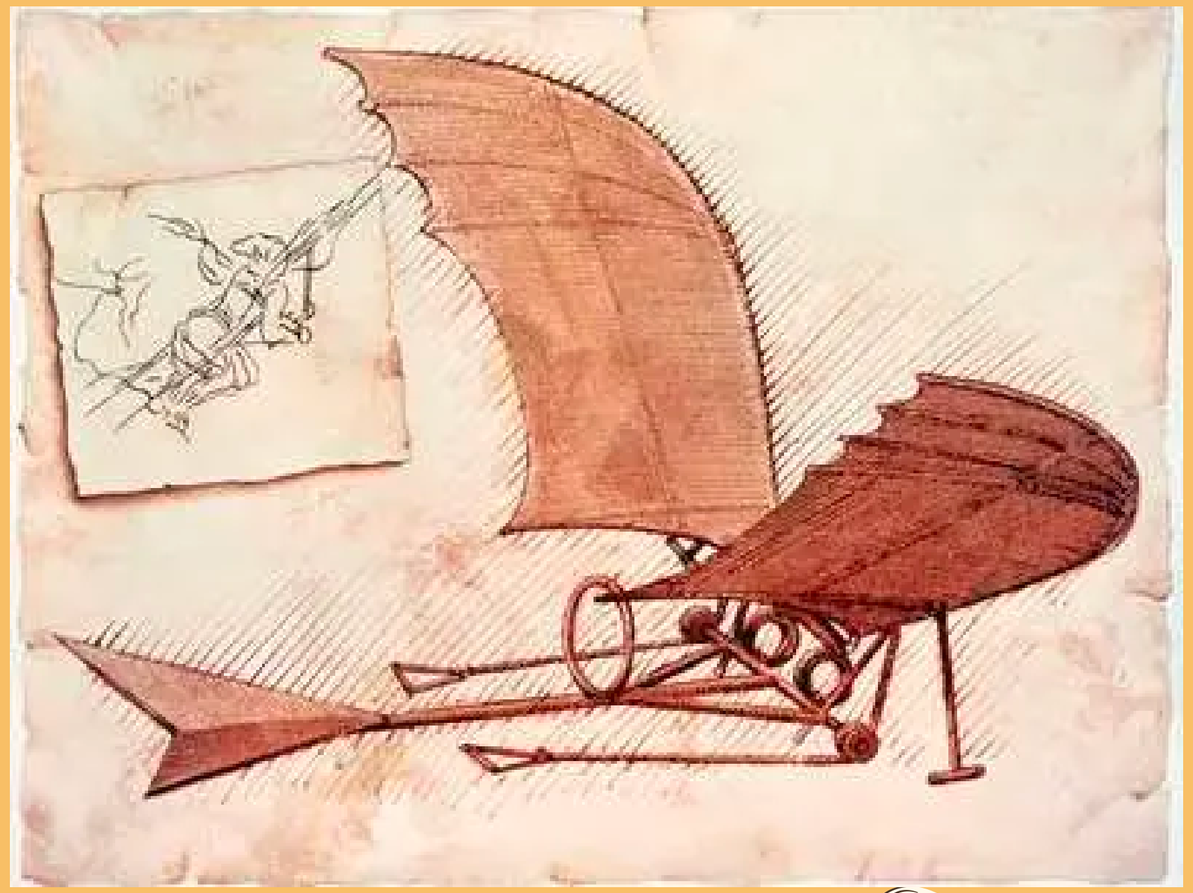
Parachute



The 15th century was the first time the world saw illustrative sketches of a conical parachute in Vinci's manuscripts. His design mainly consisted of a linen cloth, sealed on all sides and held open by wooden poles, shaped like a pyramid.

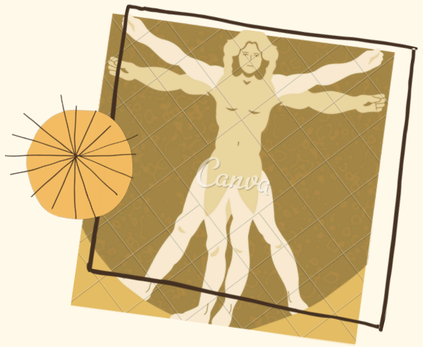
These poles were about seven meters long and were designed with the hope of allowing a man to jump from a great height without them plummeting to death or experiencing any kind of injury. The preliminary stages of the design were sketched in Da Vinci's notebook in the year 1483.

The ornithopter flying machine was designed to be an aircraft that could fly just by flapping the wings, much like a bird. Along with that, it also had a sophisticated control system, but this design lost Vinci's interest in its preliminary stages. He never built it. However, the design was enough to show Vinci's imagination power and observation skills. In his notes, he mentioned birds, bats, and kites as his inspiration for the design, and it showed.



Ornithopters

Revolving Bridge

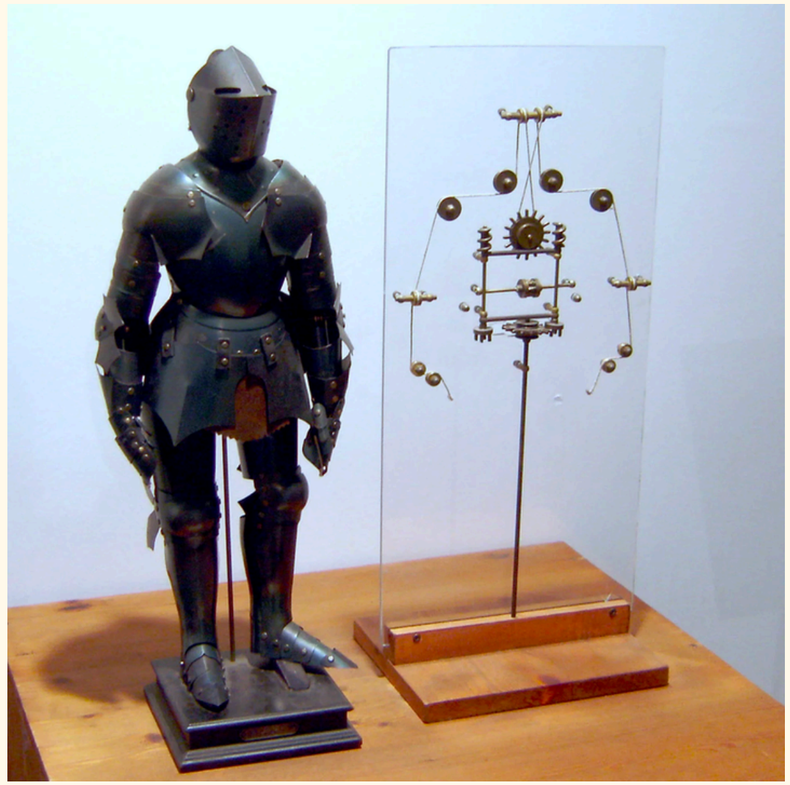


Designed for Duke Sforza, Leonardo da Vinci's revolving bridge could be quickly packed up and transported for use by armies on the move to pass over bodies of water.

The bridge would swing across a stream or moat and set down on the other side so that soldiers could pass with little trouble. The device had wheels and incorporated a rope-and-pulley system for both quick employment and easy transport. It was also equipped with a counterweight tank for balancing purposes.

The robot-mechanical knight

Better known as Automa Cavaliere, this was the first humanoid automation designed as well as constructed by anyone at the time.
It is believed that Vinci showcased this invention in a celebration that was hosted at the court of Milan in the year 1495. The robot could sit, stand, raise the visor and also independently move its hands, and have an anatomically perfected jaw. This machine was operated with a series of cables and pulleys.



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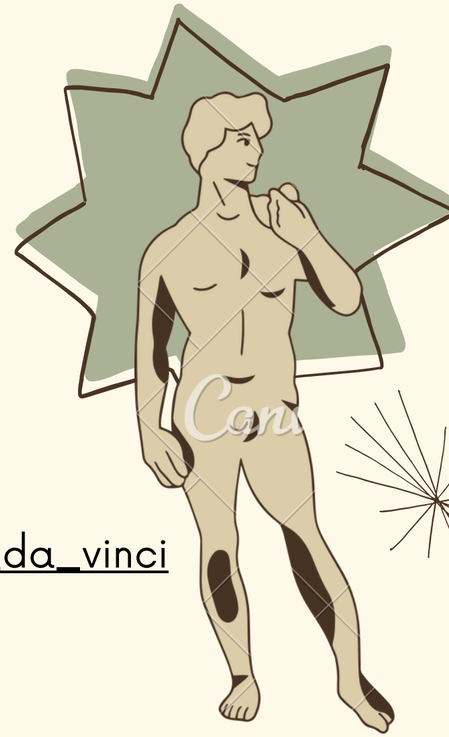

Reference:

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