

# For a sustainable future

## Smart Power Saving Mat To Prevent Wastage Of Energy

### Pro@Project

Stuti Kalra, GT Network

Climate change is one of the most pressing issues in the world today, where energy conservation and carbon footprint reduction have become the need of the hour. One path breaking solution to combat the said problem has been found by a young innovator, **Archit Roy**, student of **Class VI H, AIS Noida**, who has developed Power Saving (PS) Mat – a smart, wireless, pressure-sensitive door mat designed to save electricity.

#### A simple design

The PS Mat is an effective way to solve the problem that most of us often face - leaving lights and fans on when no one is in the room. Underneath the doormat is an automatic pressure sensor connected wirelessly to the lighting system. One needs to step on the indoor mat while entering the room for switching on the lights. The lights will auto-

Pics: GT Editorial Board, AIS Noida



Archit with the designed PS Mat (inset)

matically switch off when one steps on the outdoor mat as its inbuilt sensor detects the user's foot pattern.

#### A visionary goal

By integrating intelligent control mechanisms, this system optimises energy consumption in residential fixtures as well as office lightings. Through the utilisation of a microcontroller circuit, which is equipped with a Bluetooth module, the system ensures that lighting is tailored to actual needs, preventing unnecessary energy wastage and ensuring efficient use.

#### Overcoming challenges

It took Archit about 45 days to design the product, but the project came with its own set of challenges. One of the biggest issues was ensuring that the mat should not get activated by children or pets while also managing multiple people entering and leaving a room at the same time. Archit addressed this by creating a weight-sensitive sensor in the outdoor mat which would recognise a specific foot pattern before turning off the lights.

#### Future forward

Archit aims to connect the sensor to a web cam and home-automated systems so that when a person steps on the mat, appliances like ACs can also be controlled, based on an individual's budget and requirements.

#### Gratitude unlimited

The young innovator acknowledges the

#### Awards & Recognition

- IRIS National Youngest Innovator Award 2023
- Future Innovators Award by Amity Children's Science Foundation, 2023
- Showcased to Malaysian & Indonesian Universities delegates at AIS Noida 2023
- Applied for INSPIRE MANAK awards, 2023

#### Addressing UN SDGs

**SDG 13 (Climate Action):** By reducing greenhouse gas emissions and conserving energy, this project supports the global mission to combat climate change and achieve net-zero emissions by 2050.

huge support he has received from Chairperson, Dr (Mrs) Amita Chauhan, who has always stood by him and Amity Children's Science Foundation, that has provided him with invaluable opportunities to showcase his talent. 🇮🇳

# The golden ratio

## Decoding Nature's Divine Proportion Code

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From the perfect dimensions of a smartphone to hurricanes, galaxies, etc, it seems the universe has a personal stylist and that stylist's secret code is the 'golden ratio'. This mathematical principle has enchanted designers and artists, helping them create visuals that are undeniably captivating. Ready to decode the world around you? Let's explore the fascinating secrets of the golden ratio together!

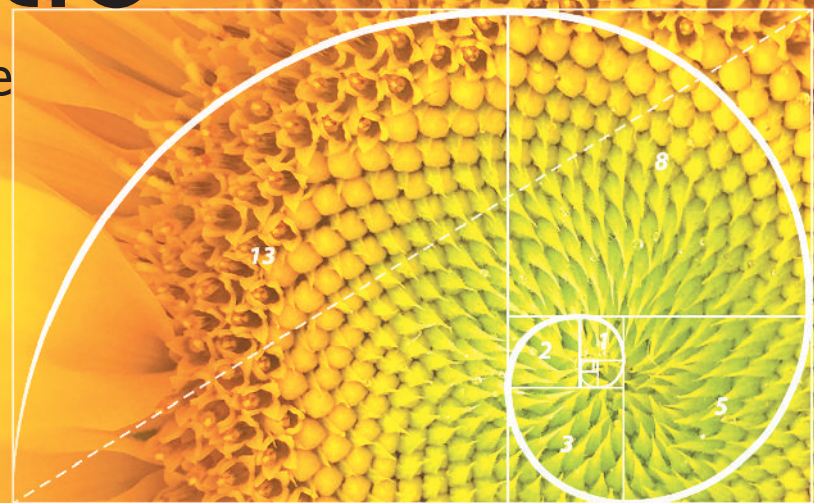
#### Secrecy decoded

At its core, the golden ratio is an irrational number, approximately equal to 1.618, that subtly governs the aesthetics of nature. Imagine a line divided into two parts: if the ratio of the entire line to the larger segment is the same as the ratio of the larger segment to the smaller segment, you've stumbled upon the golden ratio. This principle is often derived from two consecutive numbers in the Fibonacci sequence, where the larger number divided by the smaller one approaches 1.618. The golden ratio is

known by several names, including the Divine Proportion, the Golden Mean, the Golden Section, and Phi ( $\phi$ , the Greek letter). Its first documented appearance was in 1509, when Italian mathematician Luca Pacioli published it in his book 'De Divina Proportione', illustrated by none other than Leonardo da Vinci.

#### Everyday instances

Golden triangles, rectangles, squares, and spirals frequently manifest in nature - from the arrangement of leaves on a stem to the intricate spirals of seashells. Interestingly, the approximate width of actress Aishwarya Rai Bachchan's face aligns with the golden ratio, highlighting its presence in human beauty. Flower petals often follow Fibonacci numbers, forming what is known as the golden angle, echoing the measurements of the golden ratio. For graphic designers, the 'Golden Circle' based on this ratio serves as a trusted friend. Iconic logos like those of Twitter, Pepsi, and Apple are crafted using principles of the golden ratio, making them visually appealing to the human eye.



#### The ultimate design hack

In photography, the golden ratio is commonly applied by dividing the frame into thirds, both horizontally and vertically, and positioning the subject at the intersection points of these lines. A more accessible method to utilise this principle is through the Rule of Thirds grid, which is often found on the built-in cameras of smartphones and DSLRs. Throughout history and into the contemporary social media era, this rule has guided design, architecture, and art, enhancing visual appeal.

Modern architects often employ the golden ratio as a guiding principle to achieve harmony in scale and proportion, adding to the aesthetic allure of their structures.

For enthusiasts of architecture grounded in the golden ratio, must-visit locations include Taj Mahal in India, Parthenon in Greece, Great Pyramid of Giza in Egypt, Cologne Cathedral in Germany, and the UN Secretariat Building in the USA. These structures exemplify the beauty and balance that the golden ratio can impart.