



Ferril Samal Portfolio

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Hi

I'm Ferril Samal, an obsessive trivia collector and creative problem solver. I'm always discovering how interesting the world is and constantly imagining alternative histories or future utopias.

I am fascinated by science and technology. As a child I'd find every opportunity to visit the train factory near my home; to see nuts and bolts become machines half a mile long. I'm a frugal innovator, adept at solving problems with the objects and resource around me.

I found design through advertising. As a teenager I spent all my vacations at my uncle's small advertising firm. I became good enough to work on real projects at that age. Design has been a passion of mine ever since.

I come from a family of entrepreneurs. I've always been surrounded by uncles with advertising firms, aunts running restaurants and parents making artisanal soap. Studying users and their relationship to products and services excites me. I hope to startup on my own in the future.

Over the last few months, I've fallen in love with Design Thinking. It is an emerging field at the cusp of technology, art and business; the three things I'm passionate about. I hope to venture into this field in the years to come.

Education:

B.Tech and M.Tech in Mechanical Engineering, Specialization in Product Design, Indian institute of Technology - Madras

(AUG 2013 - MAY 2018)

Professional Experience:

Boston Consulting Group - Associate

(SEP 2018 - PRESENT)

Cadbury India - Supply chain intern

(APR 2016 - AUG 2016)

GoZoomo - Social media strategist

(APR 2015 - AUG 2015)

Softwares:

CorelDraw

Adobe Photoshop

Autodesk

Creo

Other skills:

Event management

Excel modelling

Project management

Digital marketing

Coding:

Matlab

Computer Vision

Deep learning

C/C++

Hobbies:

Quizzing/Quizmaster

Cryptic crosswords

Beat boxing

Cooking

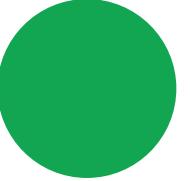


Smart phone design
for the visually
challenged

A demographic study

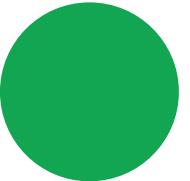
This field study was done
as part of the Design and
Aesthetics course I took
at IIT Madras in 2017

Background

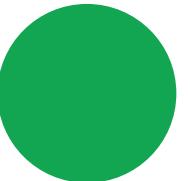


4% of the world's population is blind.

All of them are forced to use technology designed for the sighted.



Computers are the primary mode of digital access for them.
But they are neither portable nor user friendly for general use.



A smartphone centred around their lifestyle is the solution we should seek

O
B J
E C T
I V E S

Identify

Information and communication needs of the visually challenged.

Information perception methods and thought process

UI/UX requirements and limitations

Define

Design and aesthetic considerations for a smart phone for the visually challenged that can be seamlessly integrated into their lives.

20 visually challenged subjects were surveyed. All of them were members of Nethrodaya, a Chennai based NGO

User profiles



Balasubramaniam, 60 year old male

Retired government employee. Cataract caused blindness

Blindness level: 70%. Can sense the presence and absence of light.

Braille literacy: Nil

Technology exposure: Low. Not familiar with using a computer



Devika, 25 year old female

College student. A road accident caused blindness 3 years ago

Blindness level: 100%

Braille literacy: Average. Started learning only 3 months ago

Technology exposure: High. Familiar with Microsoft Accessibility Kit



Kishore, 12 year old male

4th standard student. Lost eyesight at a very young age

Blindness level: 100%.

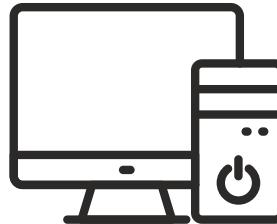
Braille literacy: High. Fluent in reading both English and Tamil.

Technology exposure: Low. IT lab open only from classes 5 and above

Survey insights

Common uses

Pain points



Computer



Mobile phone

Internet browsing
Making documents

Calling
Radio / Music
Audio books

Qwerty keyboard
No braille support
Navigating with audio

No audio feedback
No braille support

Survey insights

They form a mental map when navigating menus. But when the options are too many they shuttle up and down many times

The middle and index fingers are the most used fingers (in that order) for reading Braille. Thumb most used for typing

Alphanumeric keypad is the most blind friendly input mode. No extensive training required for senior citizens and children

The microphone/headphone unit cannot be used on the move as they can't be receptive to the external world

The shades and cane are always in possession. These accessories also let the public know they are visually challenged.

Existing solutions



The leaders in smartphone technology for the blind

RAY's mobile apps transform regular smart phones into blind friendly phones. It simplifies touch interactions and provides audio feedback.

Does not provide braille support



New haptics is designing a cheap refreshable braille screen. A prototype has been developed.
Commercial version yet to be designed

Proposed concept: A Modular digital interaction system for the visually challenged

Instead of a single device, a set of 3 accessories will augment any smart phone or computer for the visually challenged.

1

Braille unit

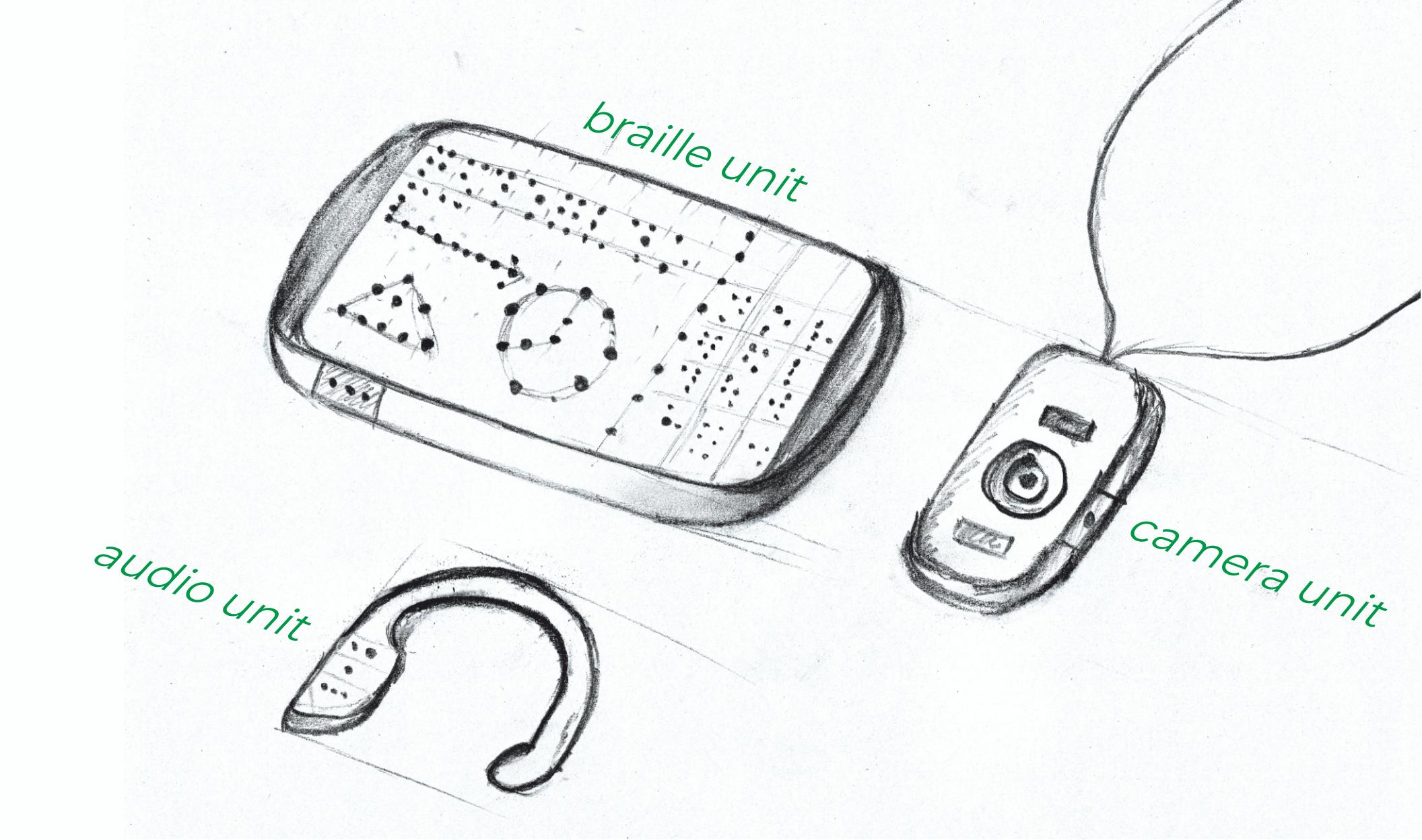
2

Camera unit

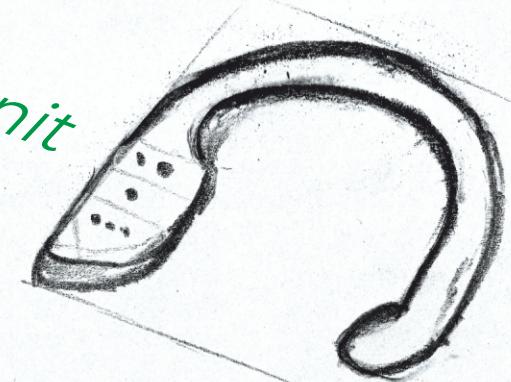
3

Audio unit

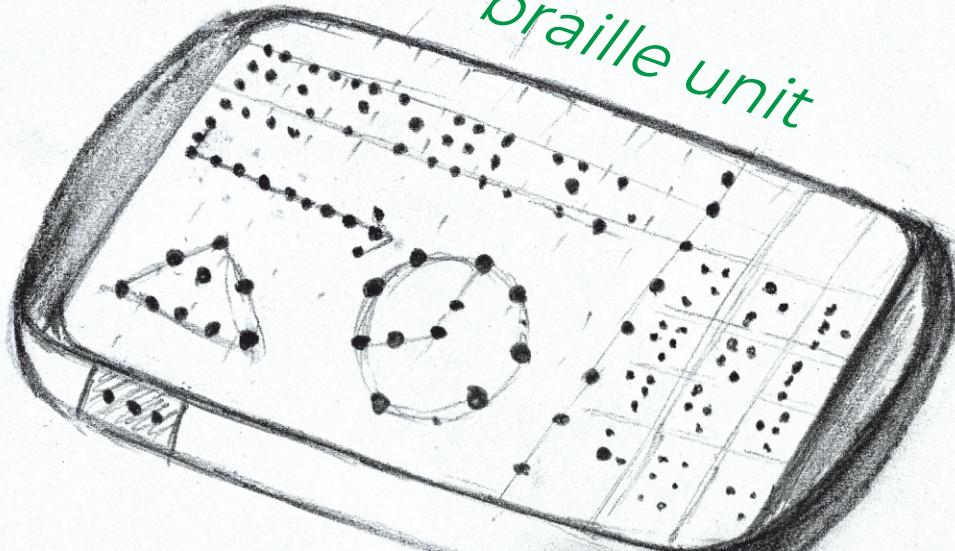
This system will act as bridge to the existing digital architecture.
It will also replace traditional braille books which are bulky and expensive



audio unit



braille unit



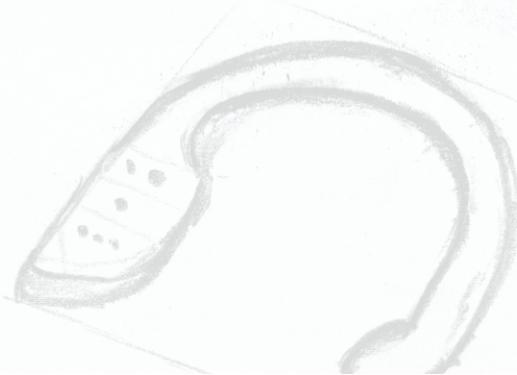
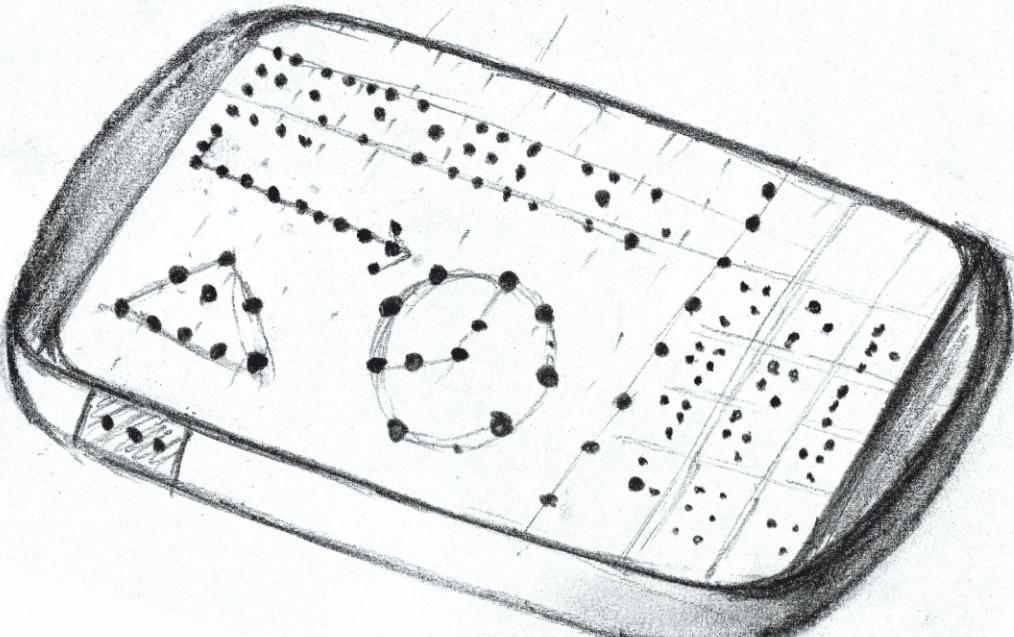
camera unit



Braille unit

A touch enabled braille screen acts as the mediator between the phone/computer and interface system. An alphanumeric keypad is formed when text input needs to be provided. Follower lines and graphics are also formed by the braille pixels. Braille tutorials will be built into the system.

The unit is also the charging hub for the other units. Module is tethered to pocket/handbag to prevent misplacement. Unit can also be fastened to non dominant arm using a wrist band for easy reading while standing or commuting.

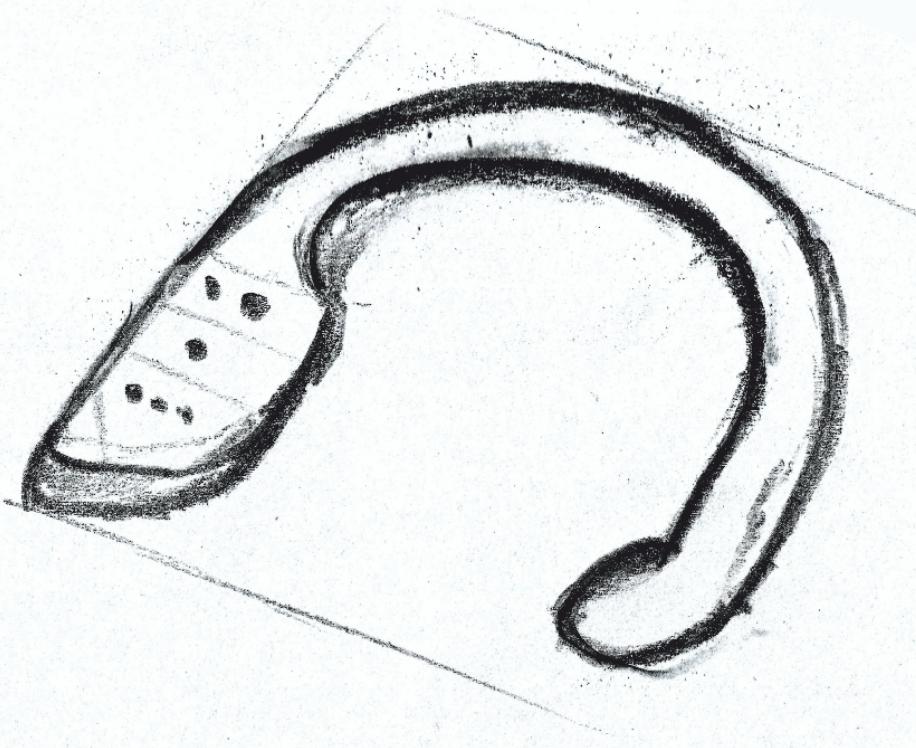


Camera unit

This unit senses the environment. It's an extendable pendant similar to Media Lab's 6th sense device. Though most of the sensing is passive, the user can also manually point at surfaces for real time translation to speech or braille. Instant snapshots can also be taken for later consumption. Camera can be worn on wrist along with braille unit for seamless exploration of the environment, e.g. being a tourist in a foreign country.

Unit doubles up as an OTG+USB pen drive to load interface software into any mobile or computer.





Audio unit

Earpiece is based on bone conduction so as to not compromise users ability to perceive the environment. All interactions with the braille screen will have audio feedback.

Microphone unit picks up audio inputs. Unit does not interfere with the shades. The earpiece stays securely on the ear like running earphones

Research has proved that blind people can train themselves to echolocate by creating clicking noises and listening to feedback. The module can train the user to acquire this skill

THE ☺☺

The left side of the slide features a complex, abstract geometric pattern composed of various shapes. It includes numerous grey L-shaped blocks of different sizes, several teal hexagonal shapes, and some teal diamond shapes. The overall design is organic and non-repeating.

Logos



Greenshoots is BCG's startup accelerator.
Startups are given expert advice and industry
connections to grow them exponentially.

Concept:

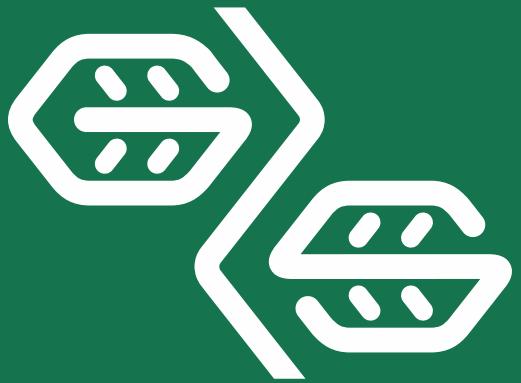
The letters **G** and **S** are stylized as leaves to fit in with the name. The **stalk** represents support. The **text below** is shaped like a flower pot to represent foundation and nurture. The aesthetic is clean and cutting edge.

Colours:

All colours are based on the BCG palette. Hence the logo will be at home in all BCG slides and documents.

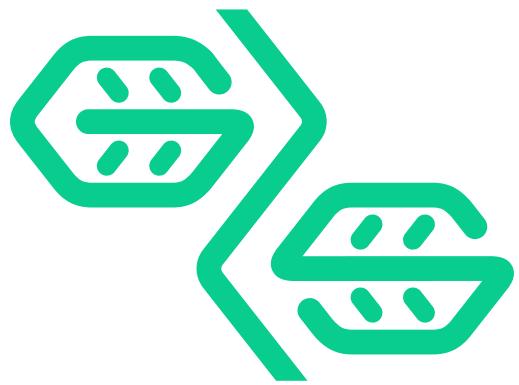


Monochrome variant 1



**BCG
GREEN
SHOOTS**

Monochrome variant 2



**BCG
GREEN
SHOOTS**



CHANGEPINS

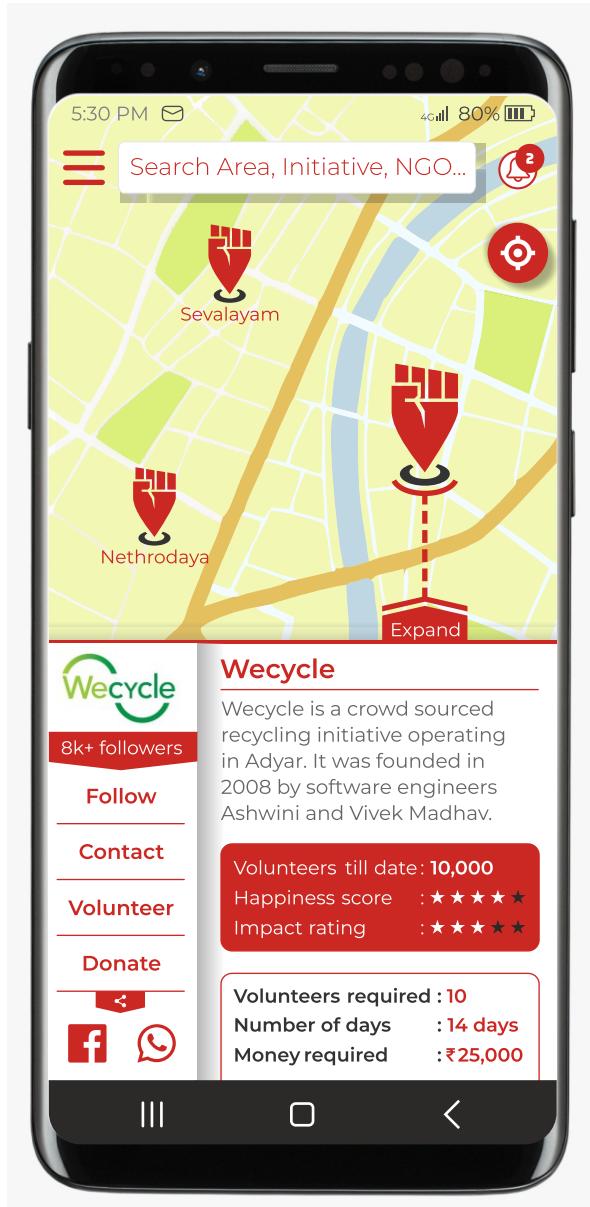


Change Pins is a platform to organize altruism and collective action. It connects responsible citizens to NGOs and citizen activists who need support.

Concept:

A fist raised in the air is a universal symbol for revolution and collective action. This motif was combined with a location pin to allude to the name. Logo was designed with the intention of being used within the app as part of the UI/UX.

Colours: A bold red reminiscent of communism and socialism was used to evoke ideas of collectivism and redistribution of resources.



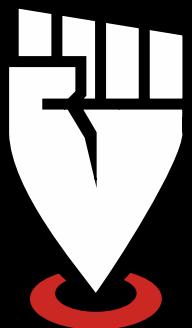
The app encourages exploration of activities in the user's neighbourhood. Each pin represents a running project initiated by a citizen activist or NGO.

The selected pin becomes larger and a panel pops up from below. The panel provides key information and actions to engage the user.

The logo and colour scheme have been seamlessly integrated.



CHANGEPINS



CHANGE PINS

retro
home





retro nome

retro nome

Retrонome is a mashup band. They string together bollywood songs from the past and present with smooth yet surprising transitions. The name is a portmanteau of Retro and Metronome. They performed at the 2018 BCG Goa outing. I was the beatboxer in the band.

Typography:

A custom made font was used. It was intended to be playful and evoke the retro theme. The 'o' in retro was turned into a vinyl record to further reinforce the theme.

Colours:

The highly saturated palette was inspired by psychedelic posters from the 60s. The aim was to make the logo pop out of the LED screen behind the performers.

Logo on the LED splash screen. The lines around the logo move according to the music being played



Project EASE

EASE is a reform agenda by the Ministry of Finance with the aim of making public sector banks more responsible and inclusive. BCG is the thought partner in this project. We tracked the performance of these banks across 100+ metrics. The results are published once every 6 months by the Finance Minister as the EASE Report. Three editions have been published till dated. This project also formed the basis for consolidation of PSBs.

This was my first case at BCG. My main module on the case was a survey of phone, mobile and internet banking services offered by each PSB. The user experience was benchmarked against the top private sector banks and a scorecard was created. Guidelines were made for each bank to improve their digital banking offerings.

The side module I worked on was branding and aesthetics of the report. I designed the logo, the report cover, formulated the icon set, selected the palette and designed some key infographics





Concept:

EASE stands for Enhanced Access and Service Excellence. The logo depicts a coin entering the slot of a Gulak (Indian piggy bank) being transformed into a sun. The broader theme is the transformation of existing banking systems for a brighter future.

The logo mirrors the typical round seal format of logos of other government initiatives but attempts to keep it modern and relatable.





Concept:

The logo represents two hands protecting a coin. The simplicity and solidity is inspired from the aesthetic of public sector bank logos. The rupee symbol and the hands are made of sharp straight edges to give the logo a robust and modern look.

EASE
REPORT



EASE REPORT



The EASE reform agenda aims to build an inclusive and responsible banking foundation for a prosperous India.

The logo captures these themes symbolically. The un-banked population transitions into **stability**, **prosperity** and **success**. The spiral ending with the arrow symbolises growth and future development. The grey elements of the logo form the letter 'e', to allude to digital financial inclusion and the first letter of EASE

Indian Banks' Association

EASE
REPORT



Public Sector Bank Reforms For EASE

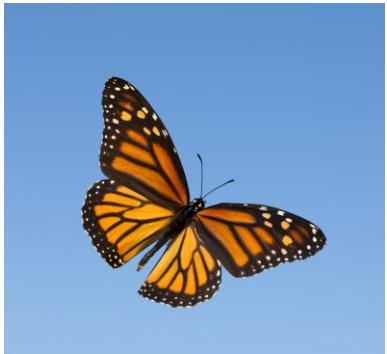


CLEAN & SMART Banking
For Aspiring India

2019
JANUARY



PARIVARTAN
ACADEMY
KARNATAKA
BOOTCAMP



PARIVARTAN
ACADEMY
KARNATAKA
BOOTCAMP

Parivartan is an experimental school set up to decolonize the Indian educational system.

Concept:

The word Parivartan comes from the Sanskrit root for **transformation**. The logo uses a butterfly as a visual metaphor to represent the concept.

The logo also incorporates the Kannada letter ಪಾ (Pa), Parivartan's first syllable in the butterfly's wing. The use of a glyph from the local language reinforces the organisation's focus on strengthening the Indian identity of its students .

Colours:

The colours represented in the logo are earthy yet vibrant. This mirrors the organisation's values of remembering ones roots and creative problem solving for future progress and transformation.

Variant for hindi speaking states using the devangari प (Pa)



PARIVARTAN
ACADEMY
DELHI
BOOTCAMP





Project Shakti is the internal code name for the merger of Bank of Baroda, Vijaya Bank and Dena Bank. The motto of the project is **Power of 3**, uniting the combined strength of the three banks.

Concept:

The central motif of the logo is the **Trishul**, the symbol of **Shakti (power)**. The coloured segments represent the members involved in the merger: **Yellow for Vijaya Bank, Orange for Bank of Baroda and Blue for Dena Bank**.

All the three elements combine to form the Trishul and represent the **Power of 3**, symbolised by the number **3** formed by the trident.

Typography:

Custom typography was created to match the sharp features of the Trishul and add gravitas to the name.



T-gang is a collective of diverse people who are united by their love for two things: music and cigarettes. All members of the band met at a chai-sutta shop right outside IIT-Madras. They've been making fusion music ever since.

Concept:

The logo is a mashup up of a stubbed cigarette and piano keys. This represents a marriage of their two passions. **The negative space forms a 'T'**, the first letter of the name.







NIRMAAN

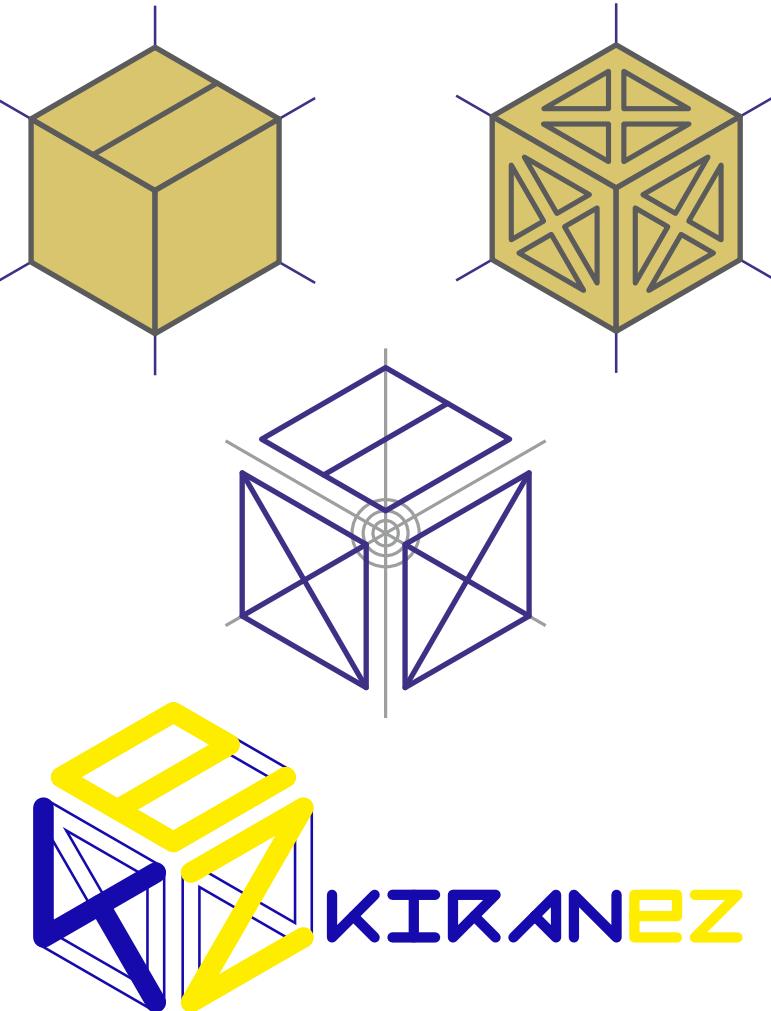
IIT-Madras Pre-Incubation Cell



The logo captures the meaning of the name and roles of **NIRMAAN**. The **turquoise** and **green** forms represent nurturing hands, helping the **seed** of the idea, represented by the yellow polygon to flower. The various elements come together to 'build' the identity, to reflect the meaning of the word. The lotus is also the emblem of IIT-Madras







KiranEZ is a logistics and IOT startup for kirana stores and wholesalers. They centralize inventory management and provide real time analytics.

Concept:

The logo is built around boxes and crates, the smallest operating unit on which the platform acts upon. The sleek looking **K**, **E** and **Z** are on the box, alluding to KiranEZ being a layer of digital intelligence over traditional businesses

Typography:

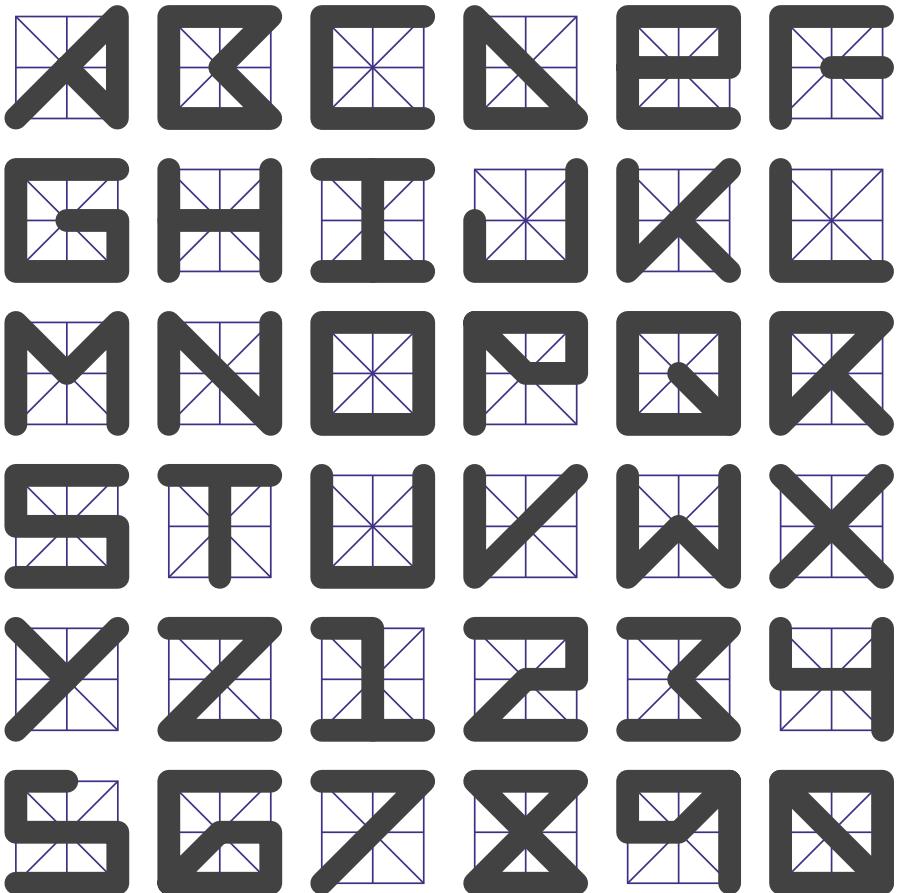
A custom font was made for the logo. Each character on the 3D isometric faces is made only of lines along the sides or diagonals. The same transformation was applied on all the letters in the name, but on a 2D flat square instead.

Colour:

A high contrast 2 colour palette was chosen with aim of standing out in packaging material.

A limited font set called **CUBISM** was created based on the concept. The font is geometric and the squareness of it implies that kerning and over shoots won't be necessary.

QUICK
BROWN
FOXES





IIT Madras cultural club logos

Over the course of my five year tenure at IIT Madras, I've designed the logos
for several of the college's eleven cultural clubs



Peacock feather + Paint brush



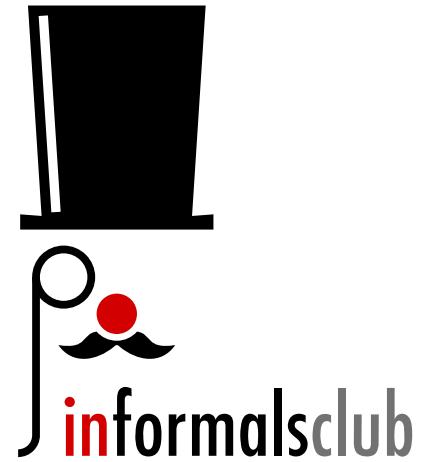
QC + Light bulb + Question mark



Two Cs + 'LOL' in the negative space



'O' modified as the mouth

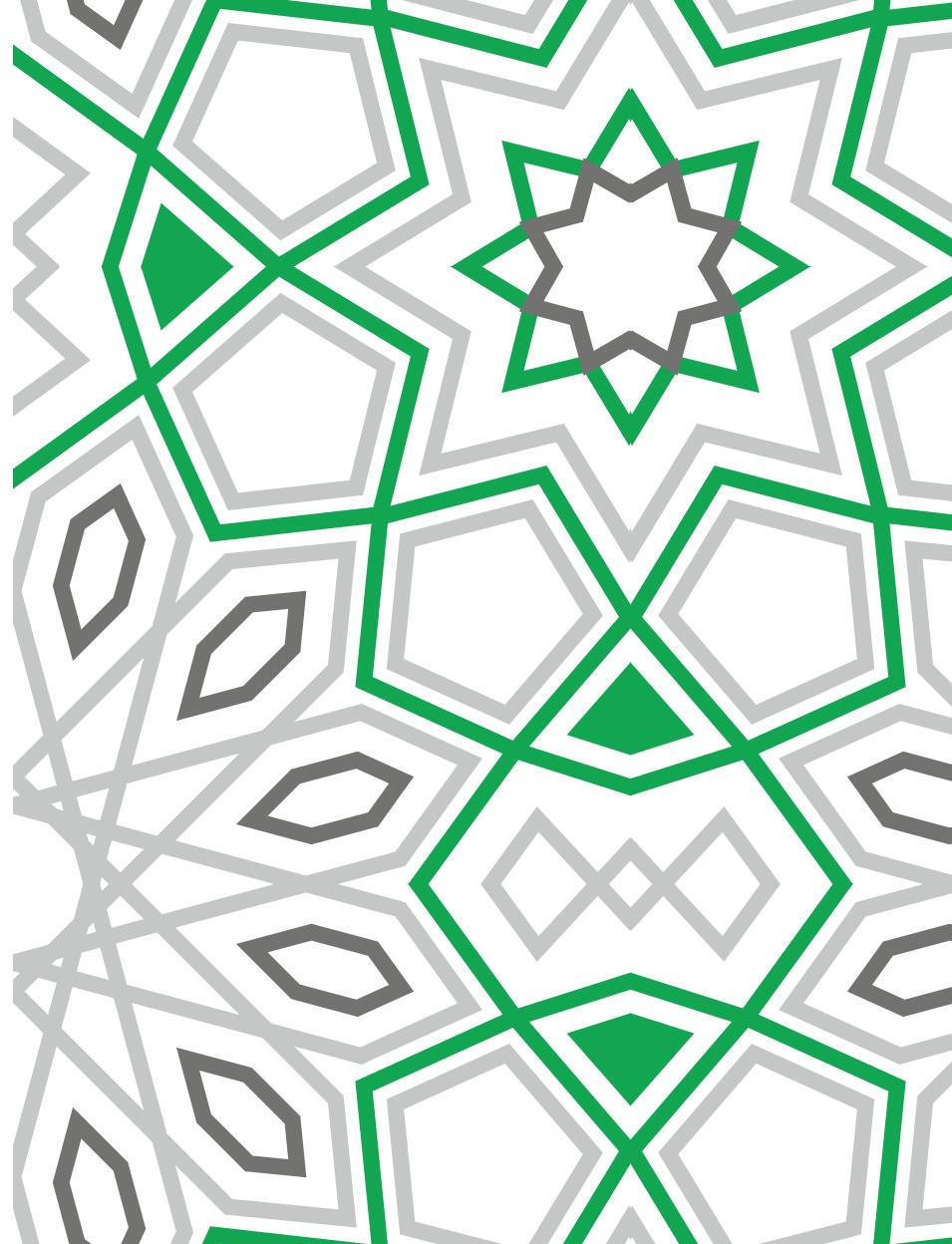


A snob + Clown



Quill + Ink + Flight of imagination

Posters



What you throw away ends up in the wrong places



reduce
reuse
recycle



Shaastra is
IIT-M's annual
technical festival.
I was a graphic
designer in the
organization for
a year

This poster was
made as part of
their CSR
campaign

The campaign
logo was also
designed by me

SAVE

TODAY

DOWLOADING WATER
@ 1LPS



WATER

TOMORROW

ERROR 404:
WATER NOT FOUND



Another poster
for the CSR
campaign

Startup Hive is Shaastra's flagship entrepreneurial summit

EVOLUTION OF AN ENTREPRENEUR

STARTUP
HIVE



Homo corporatus



Homo ideatus



Homo entrepreneurus



Homo happius

WE NEED YOU TO AMPLIFY SHAASTRA

Hype poster
for the first all
team meeting
of Shaastra's
500 members

All Coordinators Meet

20 OCT | 5 - 7 PM | C R C





FROM THE ATOM TO THE UNIVERSE...

HOW THINGS WORK

QUIZ

How Things Work is one of Shaastra's flagship events.

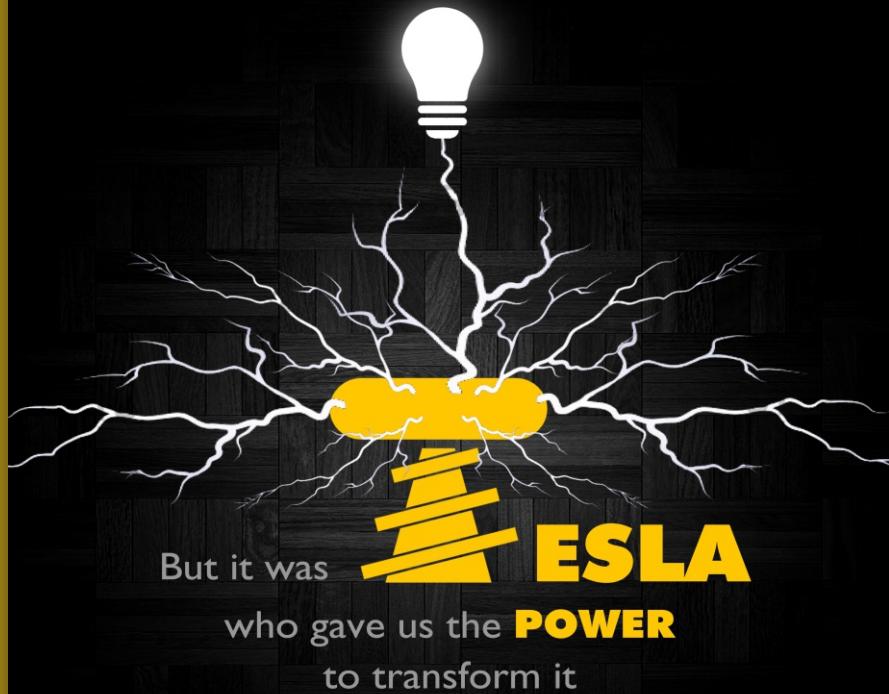
The poster tries to capture the vast scope of the quiz by stringing together scientific motifs of increasing complexity

I was also the quizmaster of this quiz and runner up at the previous year's edition.

Shaastra being a technical festival, releases posters frequently on social media to commemorate major scientific events and personalities.

This poster was dedicated to Nikola Tesla. Edison and Tesla were fierce intellectual rivals. Their feud was famously called the "War of the currents". This was also a minor sub-plot of the Christopher Nolan movie "Prestige"

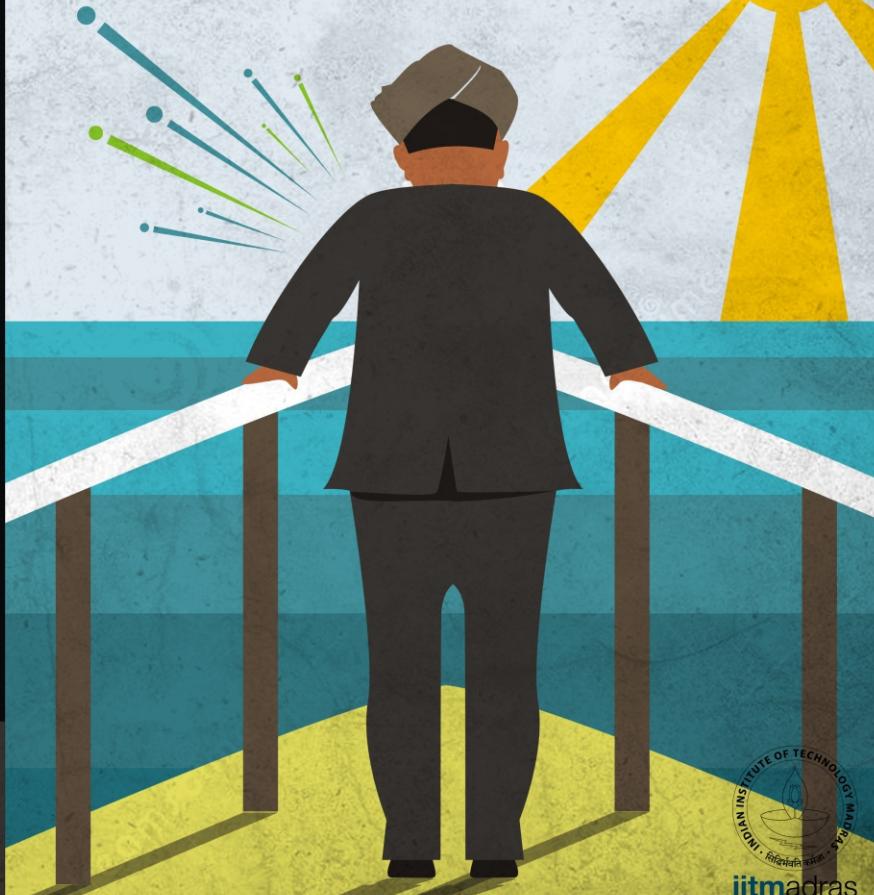
EDISON
may have given the world
LIGHT



TWO GREAT MINDS
HAPPY
M. CURIE



TWO GREAT DISCOVERIES
BIRTHDAY
C.V. RAMAN



Marie curie discovered radioactivity when she saw the glowing of her chemical samples in the dark

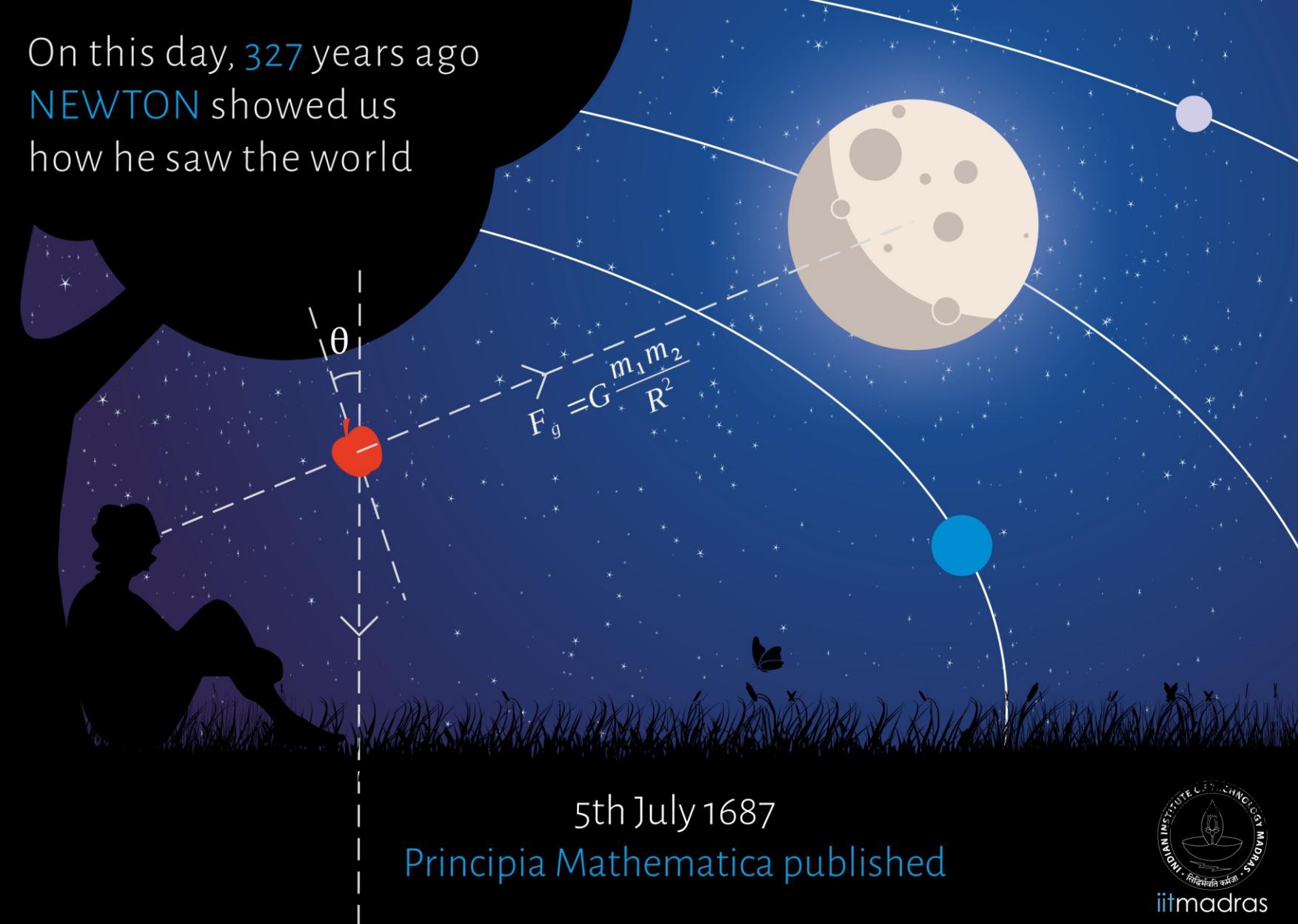
CV Raman discovered the Raman effect after noticing that different oceans had different hues while on a sea cruise.

All illustrations were made from scratch

Principia
Mathematica
contains all of
what we now
remember
Newton for.
From the laws
of motion to
the laws of
Gravity.

This poster re-
imagines the
famous apple
incident as if it
happened in
the night.
Here Newton
contemplates
the cosmos
because of the
falling apple

On this day, 327 years ago
NEWTON showed us
how he saw the world

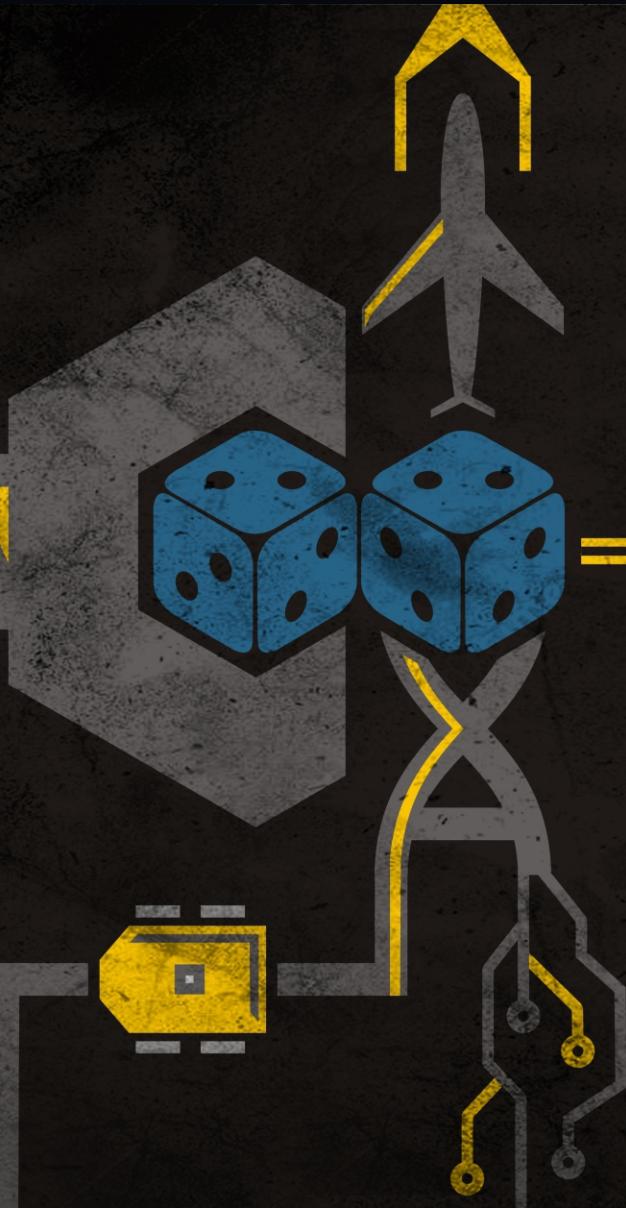


5th July 1687
Principia Mathematica published



Schrodinger proposed the well known quantum thought experiment of a cat in a box which was both dead and alive at the same time.

This poster puts a light hearted twist on the morbid experiment



WORKSHOPS

www.shaastra.org/workshops

2 WEEKS

6200

TEAMS

OVER

10,000

INDIVIDUALS
REGISTERED



DON'T GET LEFT BEHIND

iit madras presents
SHAASTRA 2015
THE SPIRIT OF ENGINEERING

Jan 3 - 6



Countdown posters are made during the lead up to Shaastra. This one is for 7 days to go. It's based on the fact that light splits into 7 colours through a prism. Poster is designed to look like Pink Floyd's "Dark side of the moon" album art



An impossible triangle is modified to look like a four. The impossible triangle is an optical illusion by MC Escher. The same concept is also used to make staircases in the dream spaces in the movie “INCEPTION”

EVERYBODY LIES



1
1
0
1
0
1
0
1
1
0
0
1
0
1
0
1
0
1
1



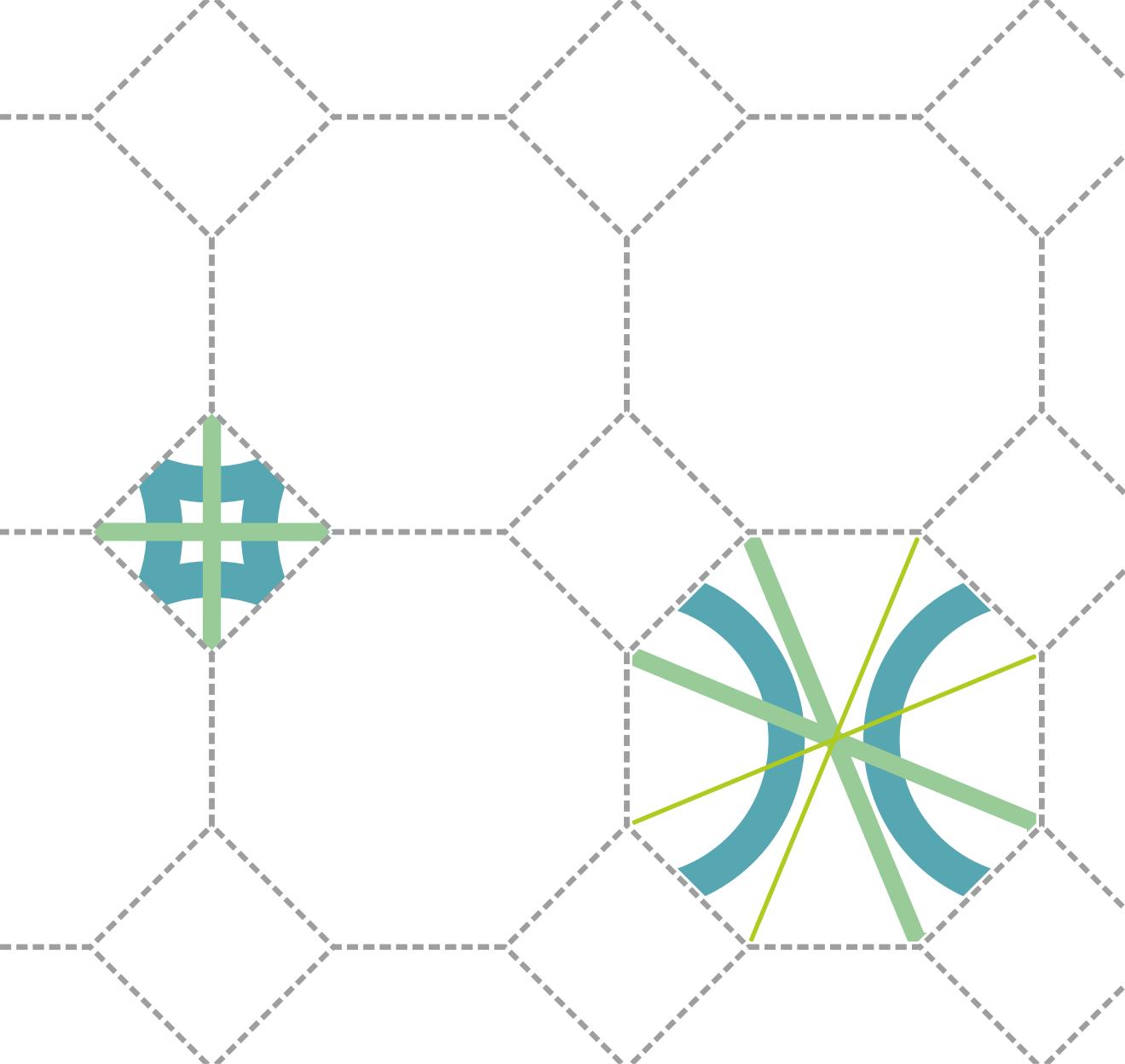
Everybody Lies is a play about fake identities on social media and online dating apps

Both these illustrations were made only using keyboard characters

They are both separated by a line made of 1s and 0s. The uncertainty of the truth is represented here

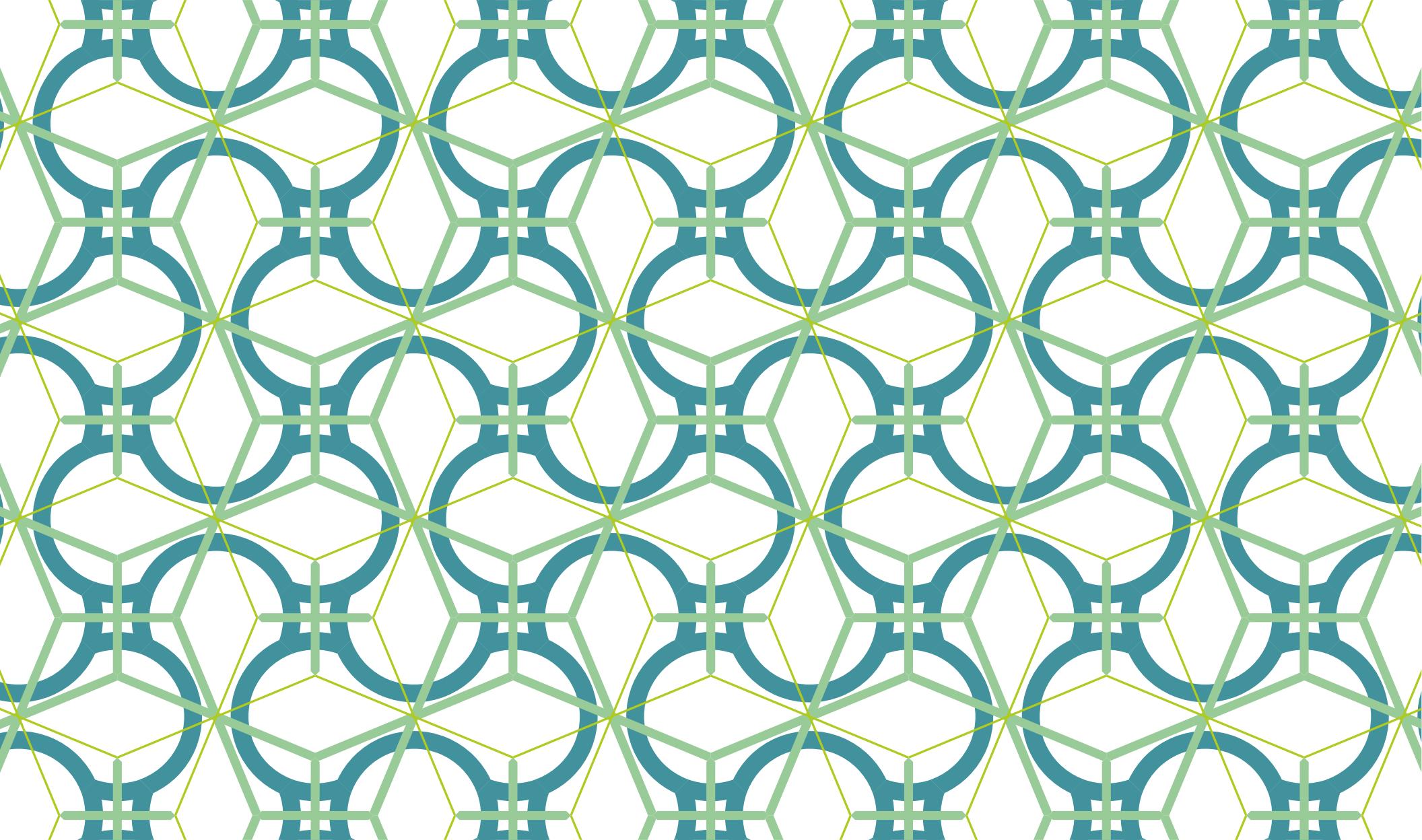
Geometric Art

I've always been fascinated by geometric art. It is at the intersection of math and art. I present some of my work in the next few pages



Mosaic 1 tile design

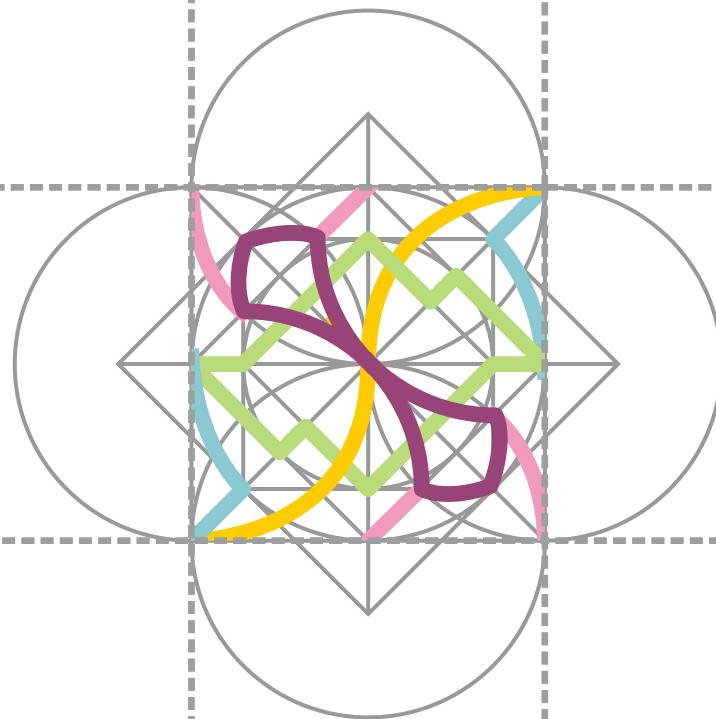
The pattern is made of two tiles. Stacking the octagonal tiles create square gaps. The symmetric square tiles form the lattice points about which the octagonal tiles rotate to produce a whirl wind effect. A cool palette emphasizing turquoise was chosen.

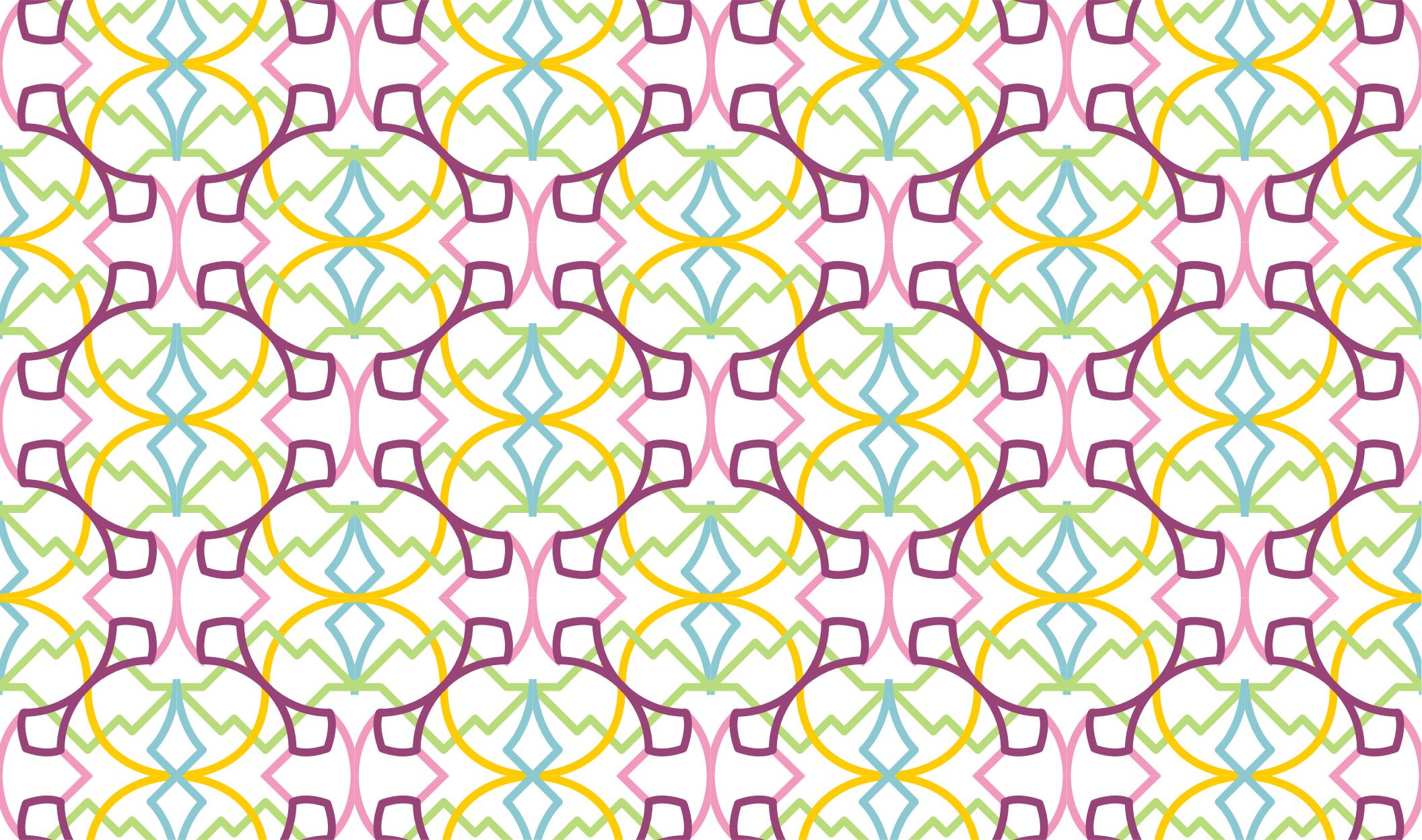


Mosaic 2 tile design

The tile is symmetric about the centre. Except for the central green polygon, all the other shapes chosen are smooth curves. The central polygon was given more area to compensate for reduced representation of straight lines.

The palette was chosen to give it a floral character.





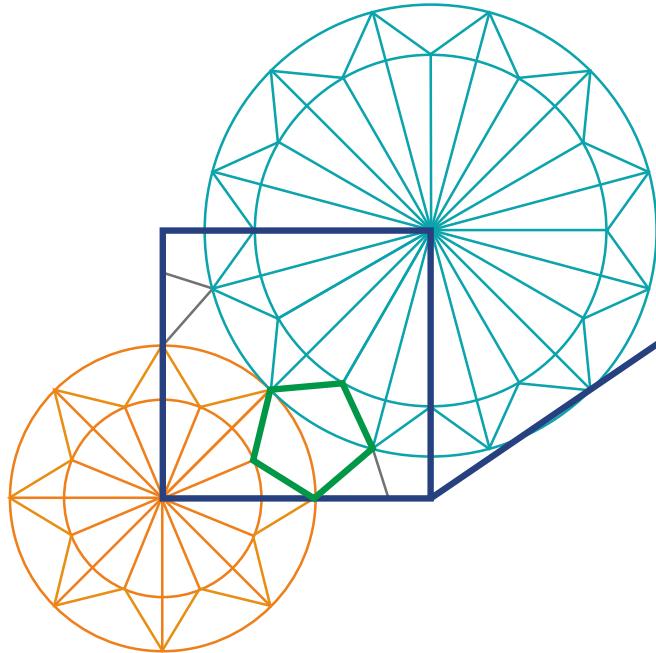
the previous two mosaics were made using my artistic intuition to replicate Islamic geometric art. In the next two mosaics, I use actual techniques used by 10th century architects to create patterns. The following academic papers were used as reference for these methods :

Reconstructing Early Islamic Geometries Applied To Surface Designs

Roger Burrows, Department of Mathematics, University of London,

Classifying Hexagonal Tilings in Islamic Architecture with a Single Numerical Parameter

Peter J. Lu, Department of Physics and SEAS, Harvard University



Mosaic 3 tile design

This mosaic is made using the **Ray Method**. A **12** pointed star and **8** pointed star are made to meet. The resulting intersections are used to overlay a pattern. The dimensions of the theses stars are calculated to produce a **nearly perfect pentagon** when they interact.

$$\theta_1 = \frac{90^\circ}{4} = 22.5^\circ, \theta_2 = \frac{90^\circ}{6} = 15^\circ$$

$$P = 108^\circ \text{ (pentagonal angle)}.$$

$$P' = 109.5^\circ \Rightarrow 1.5^\circ \text{ degree deviation}$$

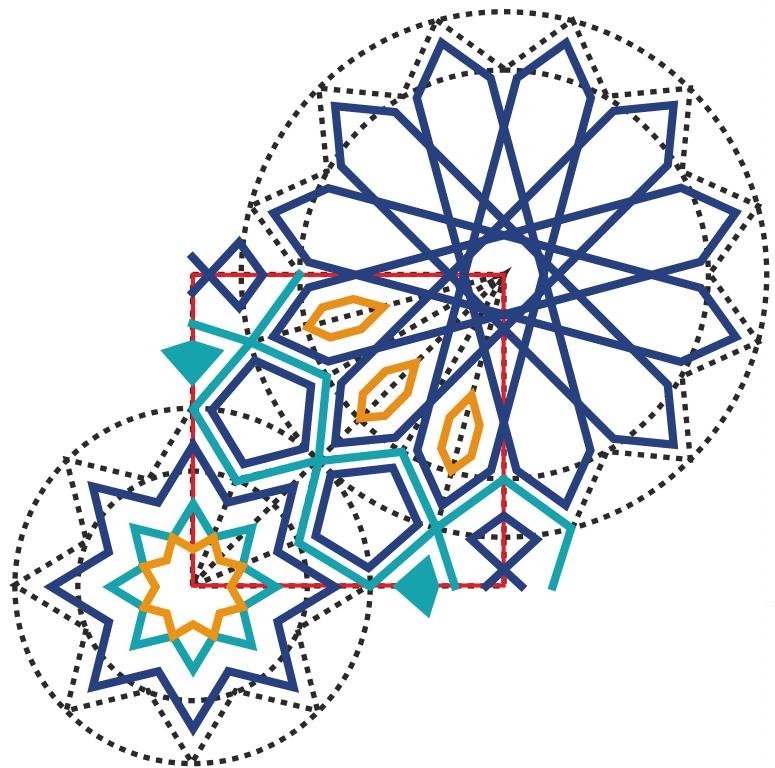
$$D = D_1 + i D_2 \quad \{ \text{Diagonal of square} \}.$$

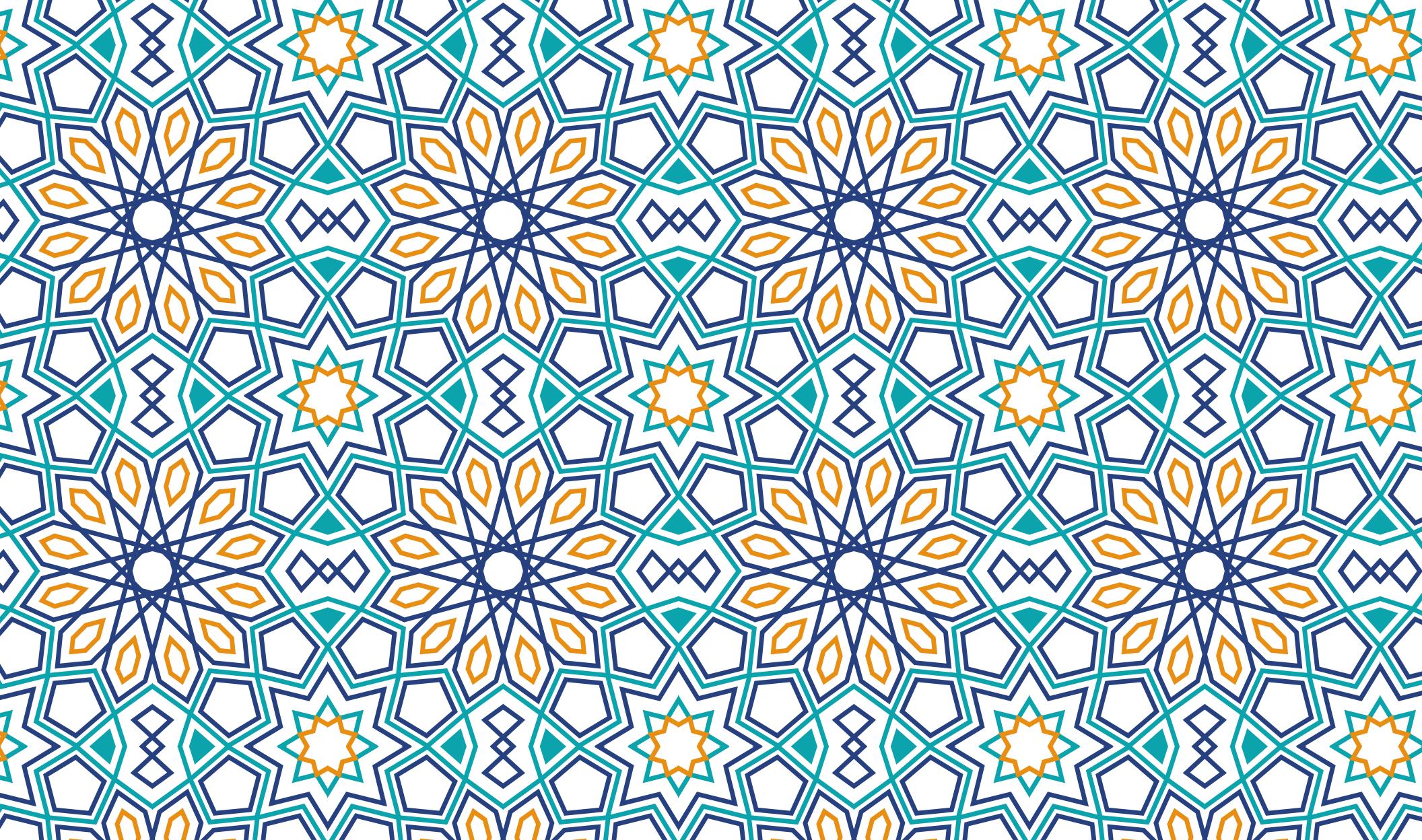
$$D_1 = a \frac{\sin(126)}{\sin(22.5)}, D_2 = a \frac{\sin(126)}{\sin(15)}.$$

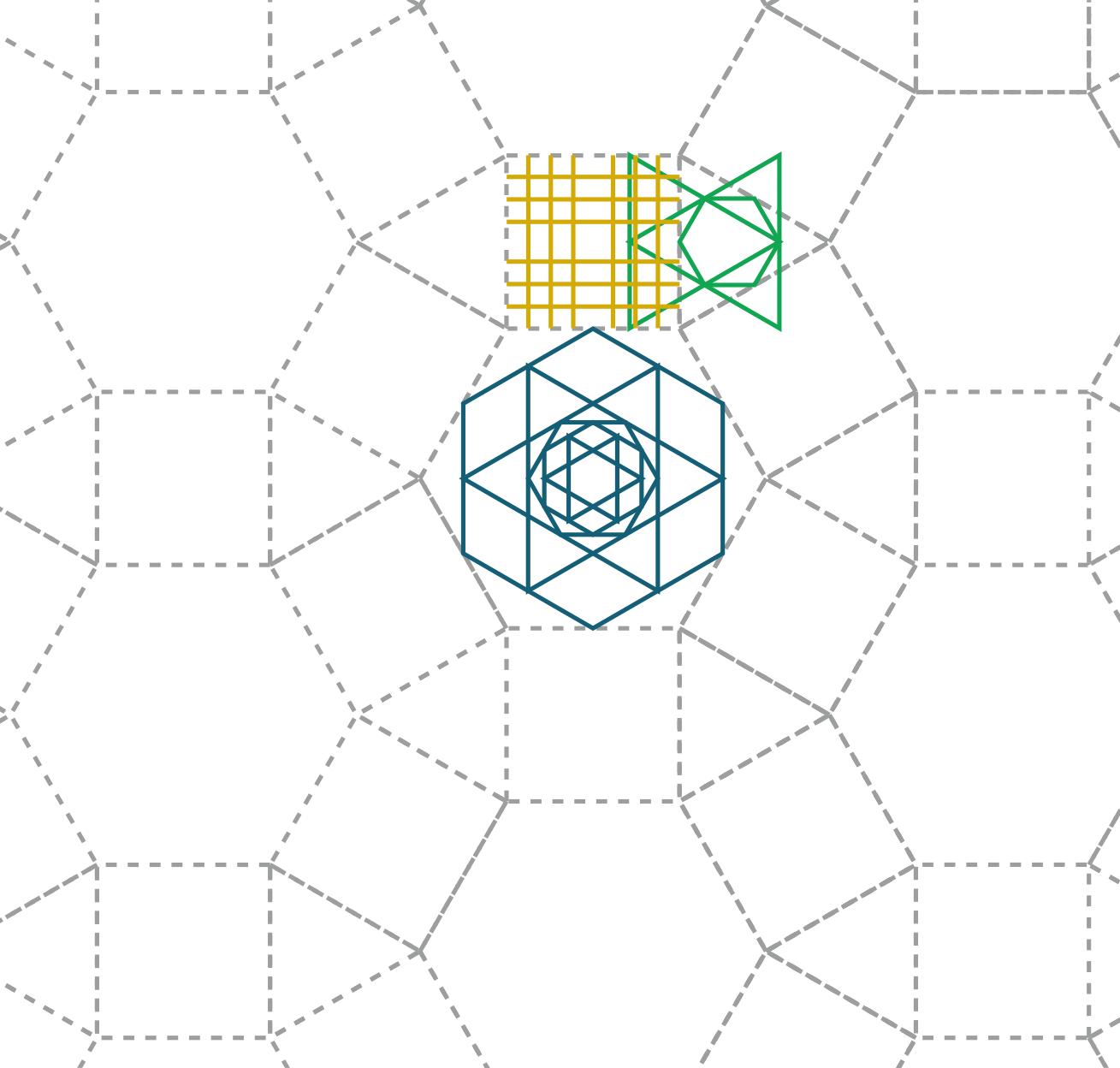
$$a = D \left(\sqrt{\frac{\sin(126)}{\sin(22.5)}} + \sqrt{\frac{\sin(126)}{\sin(15)}} \right)$$

$$d_1 = D_1 \frac{\sin(31.5)}{\sin(126)}, d_2 = D_2 \frac{\sin(39)}{\sin(126)}$$

Mosaic 3 tile design

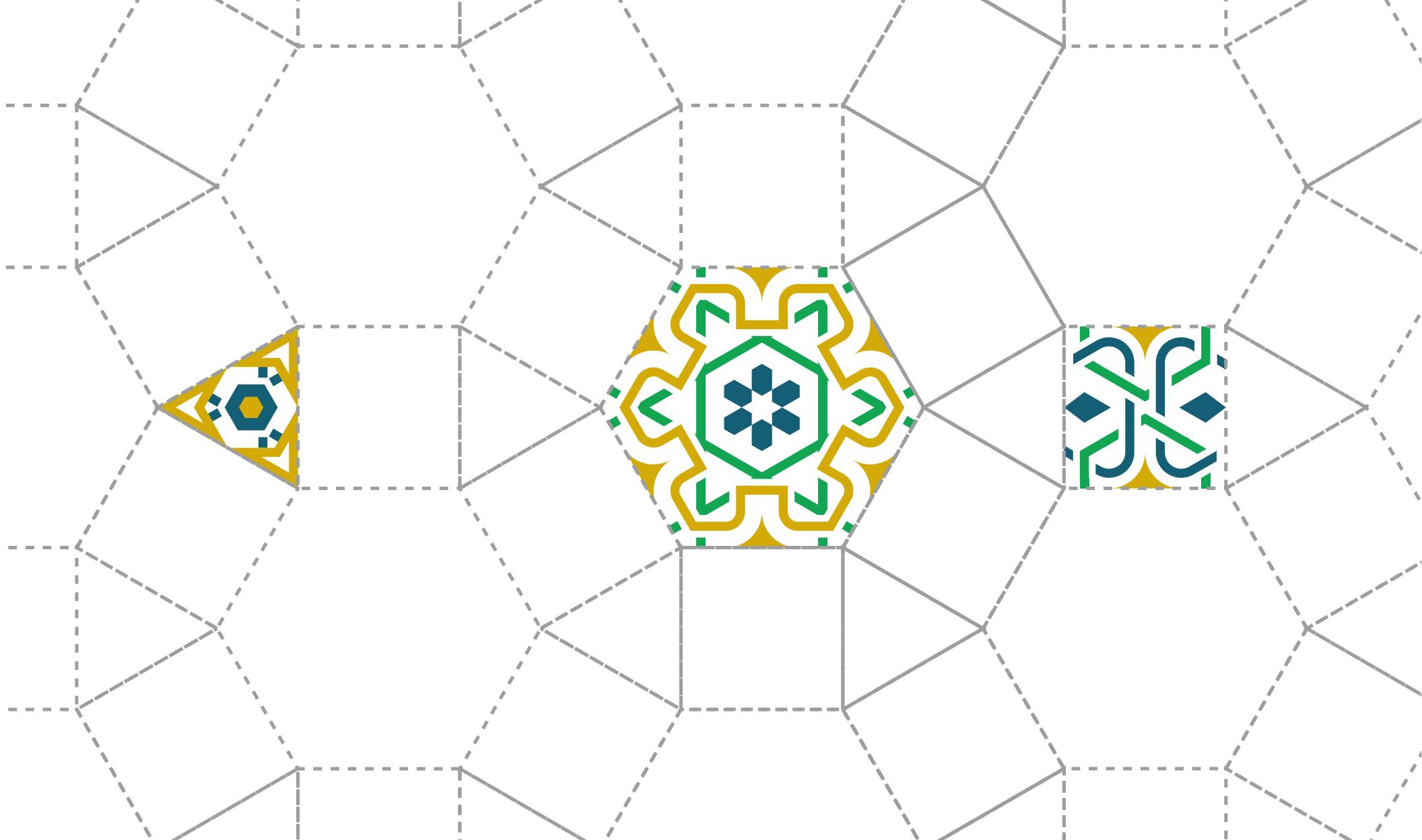


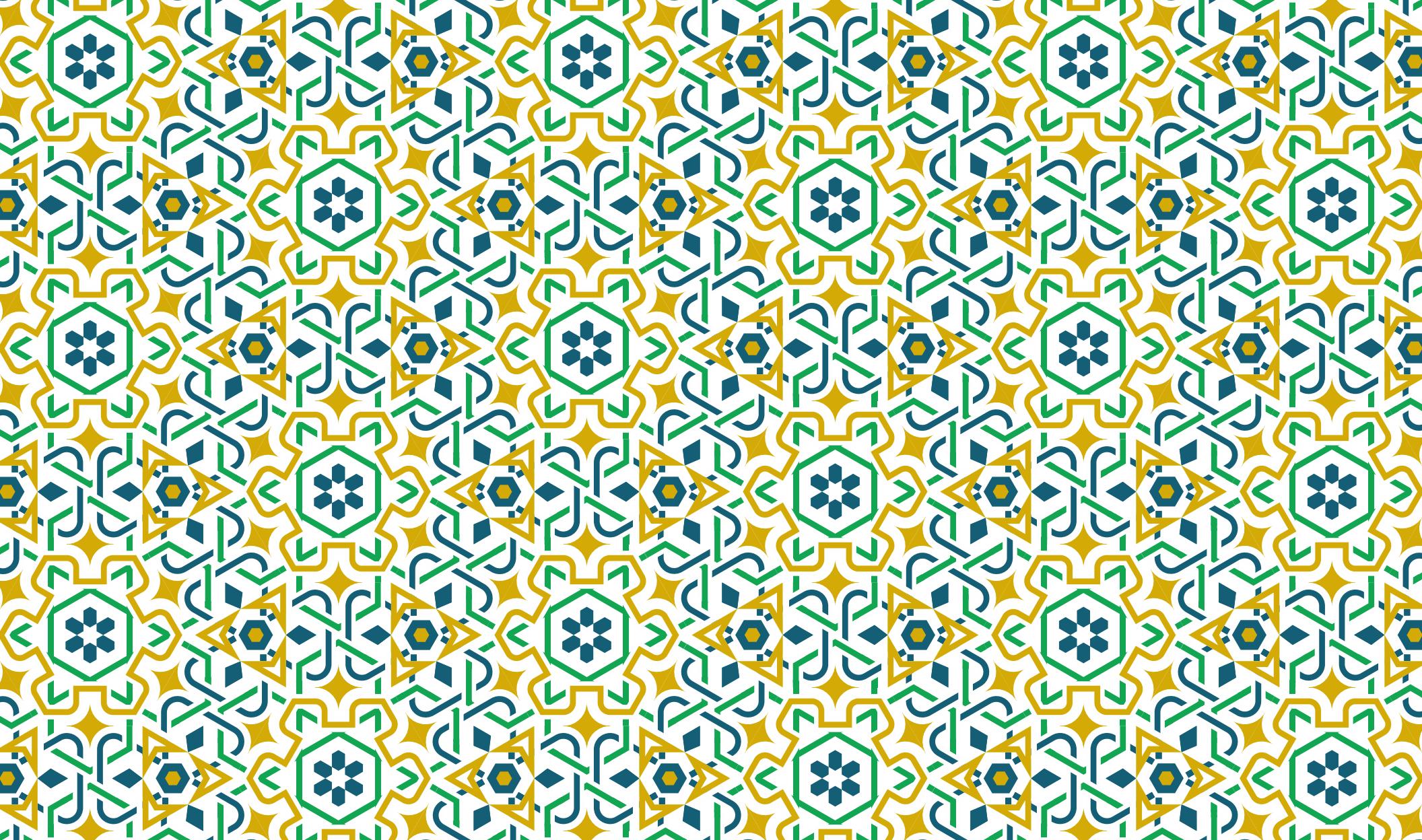




Mosaic 4 tile design

This mosaic was made using the **Tessellation of Polygon Subdivisions**. The **hexagon , square** and **triangle** are all subdivided using self similar shapes. This grid is used to overlay a pattern. The mosaic is intended to have a **weaving effect**.





THANK YOU



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