

Designer Portfolio



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Gaussian Filter. Convolution

Educational presentation

Case Study #1

Gaussian filtering and convolution are key concepts often explored in Linear Algebra courses. This presentation provides an accessible approach to these topics, illustrating them with real-world examples for better understanding. Additionally, the design of the presentation is visually appealing, featuring vibrant colors and striking graphics that enhance the overall experience.

Some screenshots

GAUSS Kernel Generation

You might be wondering, "We blur with a Gaussian kernel, it's great, but how do we generate that kernel?" To generate the Gaussian kernel, we need the Gaussian function formula

$$G(x) = \frac{1}{\sqrt{2\pi}\alpha} e^{-\frac{x^2}{2\alpha^2}}$$
$$G(x, y) = \frac{1}{2\pi\alpha^2} e^{-\frac{x^2+y^2}{2\alpha^2}}$$

5x5 Gaussian kernel generation

$$K = \{G(x, y) \mid y \in [-2, 2] \Rightarrow x \in [-2, 2]\}$$

Since we have 5 elements in each row, we did (-2; 0, 1, 2)

Kernel normalization

The point is that the sum of the elements of our kernel must be equal to 1 in order for the colors to come out correctly in our blur process, and for this

$$K = \{K_{xy} / \text{sum}(K)\}$$

a is the intensity of the blur

That is, the smaller a is, the steeper the tip of the function. As a increases, so many maximum points decrease. And accordingly, if we generate a kernel by making a larger, the intensity of our blur will increase

GAUSS Method

"Gaussian blurring" also consists of finding the convolution of the image with a kernel.

$$A * K = A_{ij} * K$$

3x3 Gauss Kernel

0.075	0.124	0.075
0.124	0.204	0.124
0.075	0.124	0.075

Unlike the normalized kernel, Gaussian kernels also take element position into account. That is, the closer the pixel is to the center, the more it affects the resulting pixel.

Original Non-gauss

But the only difference from the simple (non-Gaussian) method is the values of the kernel.

Multiply the value of each pixel by its corresponding coefficient and divide the sum by 25

$$\Rightarrow \frac{1}{25} \sum_{x=-2}^2 \sum_{y=-2}^2 x_{ij} k_{ij} =$$

FILTERS in real life

1 Filters are used in many areas of the world. For example, the Gaussian Filter is widely used in the fields of Statistics, Image Editing and Bio-Engineering

2 And we will talk with you about the role of the Gaussian filter in image editing

3 Gaussian filter - adds a blur effect to images. Although there are many ways to achieve the blur effect, the Gaussian filter is known to be the best

Since visual images are also a type of data, we can apply 2D convolution operations

3x3 Filter (Kernel)

a_1	a_1	a_1
a_1	a_1	a_1
a_1	a_1	a_1

Convolution

=

A filter is a set of numbers
Example Gauss filter: [0.25, 0.5, 0.2]

We'll soon see the generation of a Gaussian filter (kernel)

And when we apply one set to another, we refer to convolution method

A visual representation of the convolution operation

$$b_n = \frac{1}{l} \sum_{q=1}^l k_q a_{[n-q+\frac{1}{2}(l+1)]}$$

- A - input variable
- K - filter
- B - filtered data
- l - length of the filter

$$b_8 = \frac{1}{3} \sum_{q=3}^1 k_q a_{[10-q]}$$
$$b_8 = \frac{1}{3} (k_3 a_7 + k_2 a_8 + k_1 a_9)$$

This image has been blurred with Gaussian Kernel

Links and References

1. Link to a full presentation:

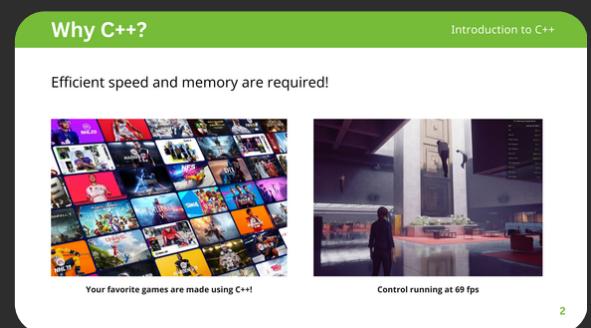
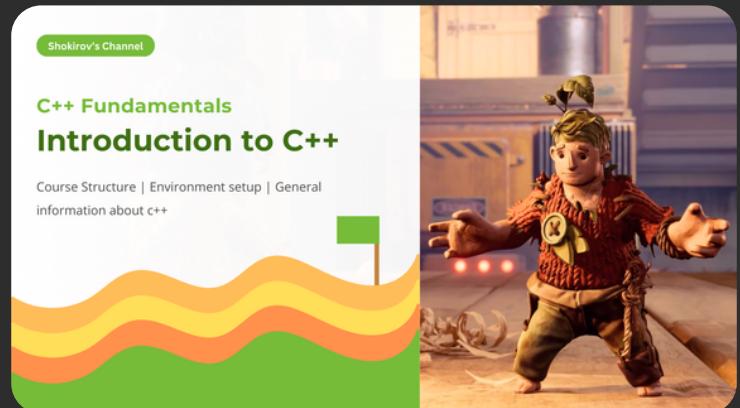
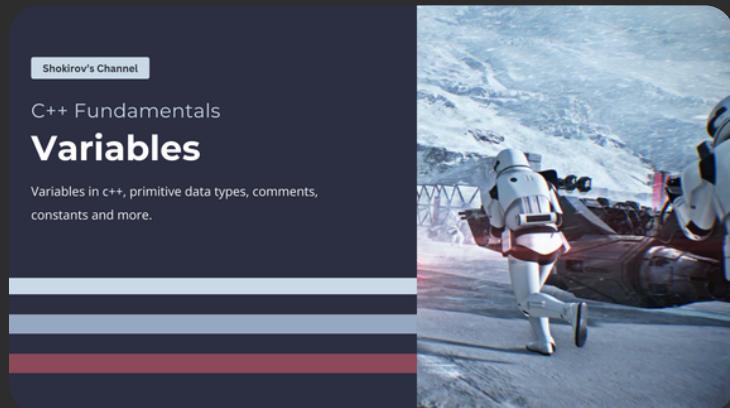
<https://drive.google.com/file/d/1t9MzzeEywYczfBr6LGTndzIVxzbXIGAT/view>

Fundamentals of C++

Educational videoseries

Case Study #1

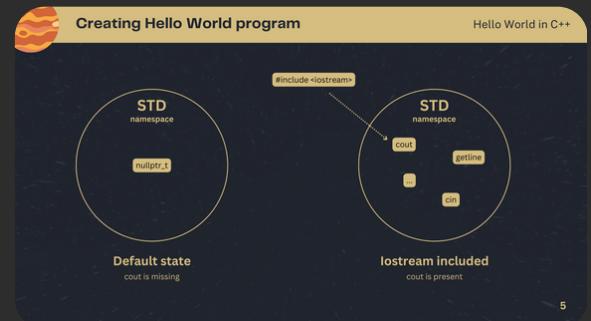
As part of my C++ video course, I am also undertaking a major effort to design the visual presentation of each course module. Every lesson is carefully crafted, with a unique central theme and a tailored color palette chosen to match. For instance, the design of the first module was inspired by Star Wars, while the second draws influence from the game It Takes Two.



Links and References

1. Link to a first video lesson:

https://drive.google.com/file/d/1M7Cgrv1LRGM4GcNtcqN2_LUz3kMzeZP9/view



Early Renaissance in Florence

Presentation

Case Study #2

This case study features a presentation which revolves around the Early Renaissance in Florence. The presentation not only elaborates on the trajectory of the Renaissance, but also accents period's central figures, architecture and culture.

Furthermore, it gives great insights into the medicine, education, military and economy of back-then Florence. Each page has been carefully designed (avg-time-per-page: 45min) with a vast focus on the text visuals. Link to a full presentation is given in the References Section (see below).

Some screenshots

All the pictures this project features are in public domain



Links and References

1. Presentation Link: <https://www.canva.com/design/DAFOlmORIXE/V-86y1JXKnCcfvxcGmHMYw/view>
2. The Early Renaissance in Florence. (n.d.). <https://www.nga.gov/features/slideshows/the-early-renaissance-in-florence.html>
3. A&E Television Networks. (n.d.). Medici family: Cosimo, Lorenzo & Catherine - History. History.com. <https://www.history.com/topics/renaissance/medici-family>
4. Encyclopædia Britannica, inc. (2024, June 20). Medici family. Encyclopædia Britannica. <https://www.britannica.com/topic/Medici-family>
5. Wikimedia Foundation. (2024a, June 1). Renaissance architecture. Wikipedia. https://en.wikipedia.org/wiki/Renaissance_architecture
6. Wikimedia Foundation. (2024b, June 23). Filippo Brunelleschi. Wikipedia. https://en.wikipedia.org/wiki/Filippo_Brunelleschi
7. Wikimedia Foundation. (2024c, June 29). Plague doctor. Wikipedia. https://en.wikipedia.org/wiki/Plague_doctor

Agency of Presidential Schools

A series of visual contents

Case Study #3

This case study features a series of visual contents such as posters, banners, videos, book designs and presentations made for the [Agency of Presidential and Specialized Schools](#)



1 Merch for Mendelev International Olympiad Tashkent 2022



2 International Woman's Day Poster



3 SAT Seat Availability Public Website

SAT Seat Availability Uzbekistan

Select a date:

27 March 27 March 27 March

Select a city:

Tashkent

Uzbekistan CollegeBoard
Part of Uzbekistan Development Project. All systems functional

Cambridge School Tashkent

27 March 2024

Kh Rakhmatulloev Street No 3 Shayhontohur District Tashkent, Uzbekistan

Available

Cambridge School Tashkent

27 March 2024

Kh Rakhmatulloev Street No 3 Shayhontohur District Tashkent, Uzbekistan

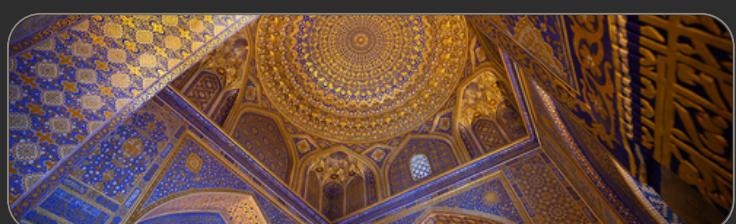
Almost full

Cambridge School Tashkent

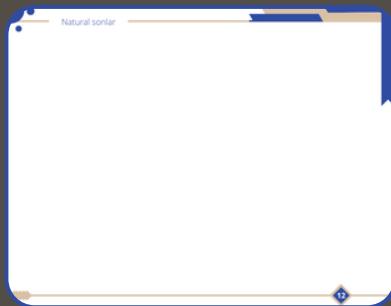
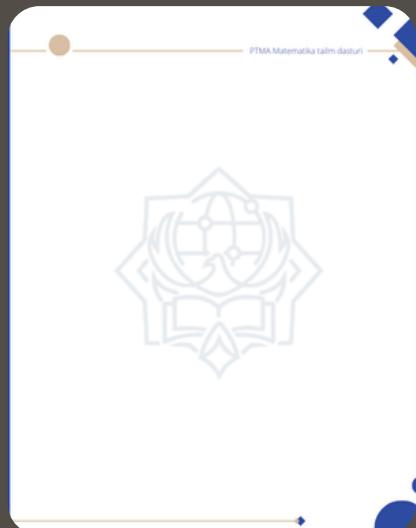
27 March 2024

Kh Rakhmatulloev Street No 3 Shayhontohur District Tashkent, Uzbekistan

No seats



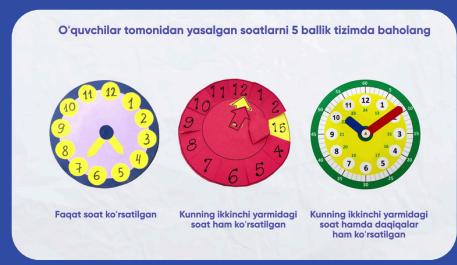
4 Math textbook design for 5-11 classes



Tashkent 2022

5 Explanatory Video For Teachers

Tashkent 2022



#253d84



#f4f4f4



#e15e73



PIIMA SIGNATURE PALETTE

Links and References

1. Mendeleev International Chemistry Olympiad Intro Video.

<https://www.canva.com/design/DAE-zOYThaQ/nMkMDdOgikUa5ZxnqQDQ4Q/watch>

2. International Women's Day Posters. Two:

<https://www.canva.com/design/DAFcWyNqGcA/OKgWHW8DOD1fTSSymr7wIQ/view>

https://www.canva.com/design/DAE4zVx6nbg/-U1QqlQvZRMSoJ9_sdf2oA/watch

3. SAT Seat Availability. Link for website and design.

<https://satuzbekistan.vercel.app>

<https://www.canva.com/design/DAF8scRMsNk/HfhRqMvQZYiwwacktvqoRQ/view>

4. School Mathematics Textbook Design.

<https://www.canva.com/design/DAEsy32FZkQ/csLJNAOPAEa-oOZiy1cMSg/view>

5. Explanatory Video For Teachers' Design.

<https://www.canva.com/design/DAFCbqIfFXc/pbZxFcX1d7ZNDPTIkaRUNg/view>

Sergei Yesenin Historic House Museum

Virtual Tour Presentation and Flyer

Case Study #4

This case study presents the contributions we've made to the Sergei Yesenin Historic House Museum in Tashkent. Specifically, we've crafted a signature presentation for them to showcase to coming guests, and a flyer to distribute.

Sergey Yesenin is one of the most popular and well-known Russian poets of the 20th century.



Some screenshots



Museum Flyer Design

Наша локация

РЕЖИМ РАБОТЫ:
Музей Сергея Есенина в Ташкенте работает с понедельника по пятницу с 10:00 до 17:00.
Выходные – суббота и воскресенье.
Вход в музей бесплатный.

Как нас найти:
Музей Сергея Есенина в Ташкенте работает с понедельника по пятнице с 10:00 до 17:00.
Выходные – суббота и воскресенье.
Вход в музей бесплатный.

QR-код

Вы можете связаться с нами по номеру
99897110332
или по электронной почте
esenintashkent@gmail.com

www.esenin-museum.uz

the museum

Победитель в номинации
самый маленький и уютный музей

Гос. МУЗЕЙ
А.С.Есенина

Что может быть лучше прогулки по роскошному музею?

www.esenin-museum.uz

Зал №3

Зал №1

Зал №2

Краткий обзор залов данного музея

Links and References

1. Sergey Yesenin House Museum in Tashkent.

<https://en.esenin-museum.uz>

2. Virtual Tour Presentation.

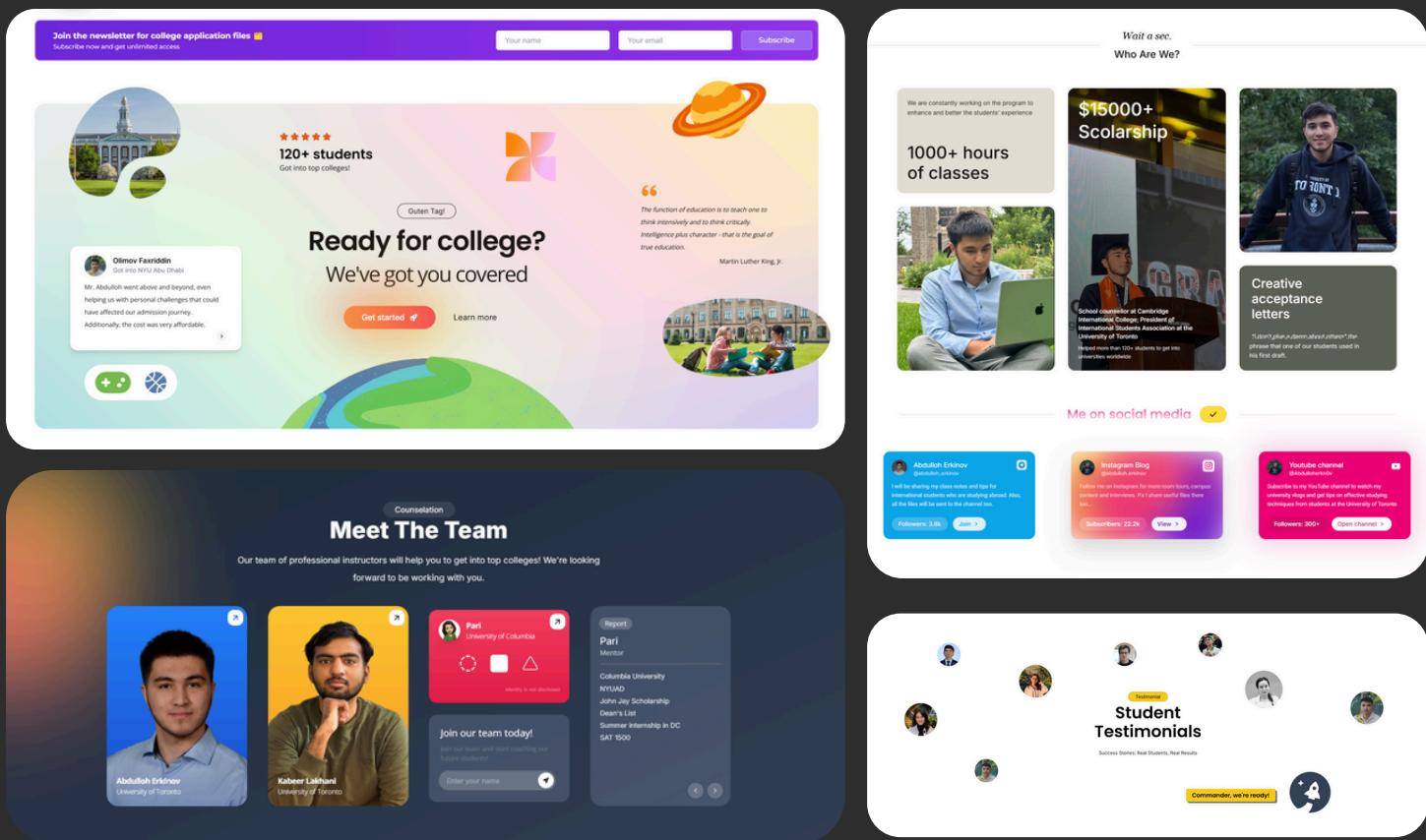
<https://www.canva.com/design/DAFUOrT49VQ/1ItUAUiOjOzzo9TOTU42MQ/view>

3. Flyer Design.

<https://www.canva.com/design/DAFUOrT49VQ/1ItUAUiOjOzzo9TOTU42MQ/view>

The original version of this website was designed as a portfolio for Abdulloh Erkinov. However, recent updates have transformed it into a comprehensive college application assistance platform. A significant focus was placed on enhancing the visual design, making it both user-friendly and aesthetically engaging. Overall, this has been one of the most creative and rewarding projects I've ever had the opportunity to work on.

Some screenshots



Links and References

1. Link to the website:

<https://abdulloherkinov.uz>

2. Link to a Github repository:

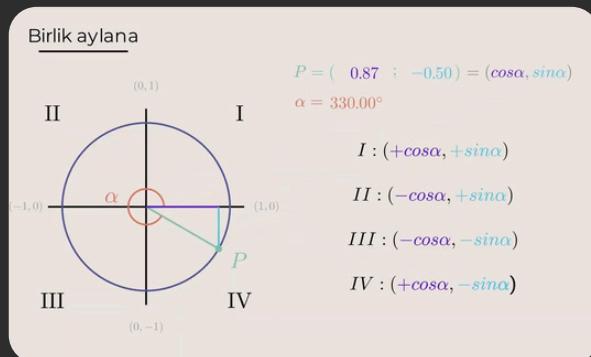
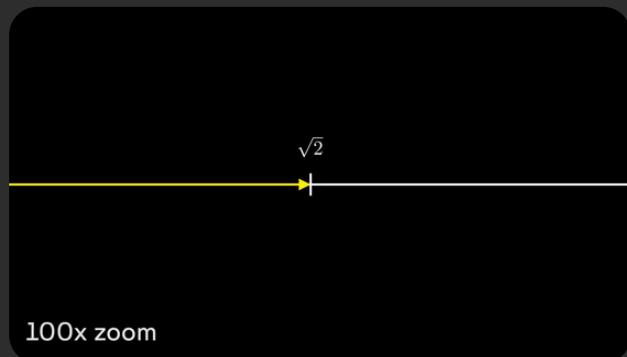
<https://github.com/shokirovw/abdulloh-website-new>

Animated Math videos

Educational content

Case Study #5

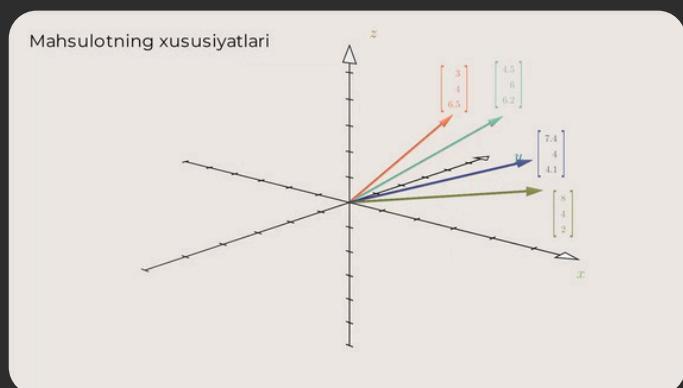
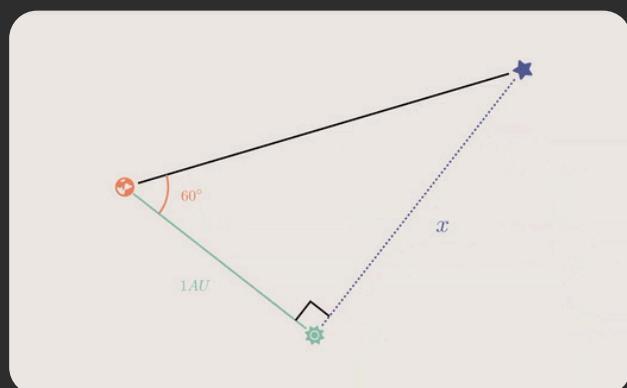
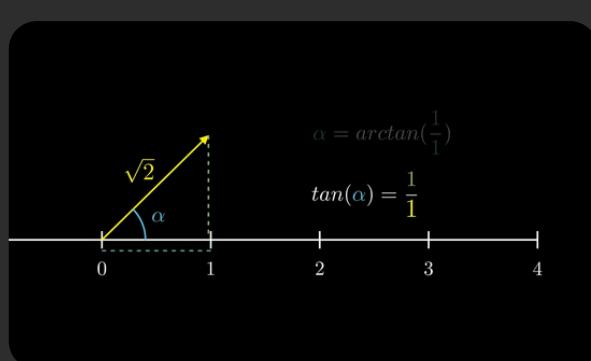
This case study showcases a series of educational math videos featuring both 2D and 3D animation. Below, you'll find a selection of screenshots that provide a glimpse into the visuals. For the full animated experience, please refer to the Links and References section below.



Задача на прямоугольный треугольник:

Гипотенуза прямоугольного треугольника равна 13 см, один из катетов равен 5 см. Найдите площадь данного треугольника.

Дано:	Чертеж:	Формулы:	Решение:
$\triangle ABC$ $AB = 13 \text{ см}$ $CB = 5 \text{ см}$		$S = ab / 2$ В нашем случае: $S = AC * CB / 2$ Сторону AC находим через Теорему Пифагора: $a = \sqrt{c^2 - b^2}$ $AC = \sqrt{AB^2 - CB^2}$	$S = ?$ $S = AC * 5 / 2$ $AC = \sqrt{13^2 - 5^2}$ $AC = \sqrt{169 - 25}$ $AC = \sqrt{144}$ $AC = 12 \text{ см}$ $S = 12 * 5 / 2$ $S = 30 \text{ см}^2$



Links and References

- Link to a collection of animated videos

https://drive.google.com/drive/folders/1ZxHnyImOvgpf6O-N_3deHOiku4Q8Mpc5

WKAI Uzbekistan

A series of festival posters

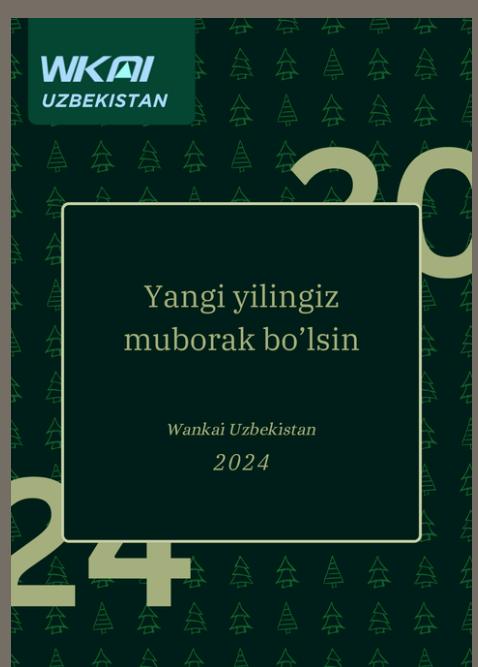
Case Study #5

This case study enlists a few of my designs that I've done for WKAI Uzbekistan. WKAI is international leading PET manufacturer with its headquarters based in China.

Chinaplas 2024 & Plastex 23



New Year 2024



Ruplastica 2024

