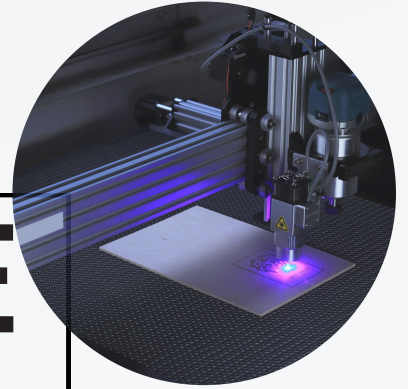


FINAL PROJECT THESIS

# BRINGING THE ROOTS TO THE PRESENT


FRUNZE VALENTINA



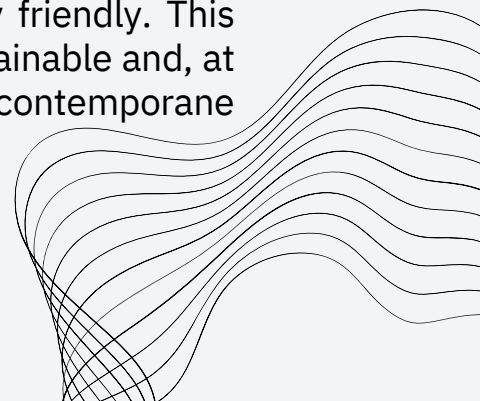
FABRICADEMY  
textile and technology academy

# Structure

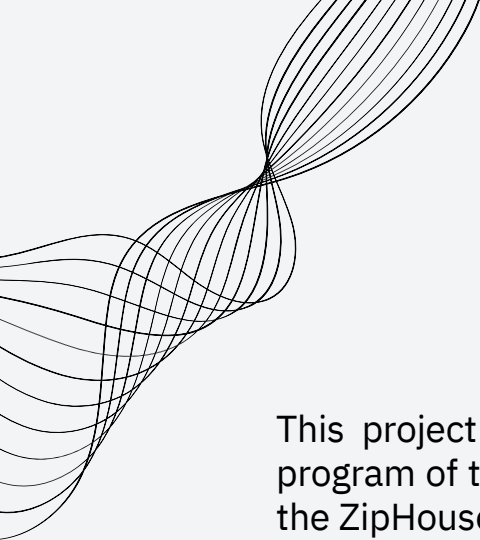
Abstract	3
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Introduction (framework)	5
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Brands, collections, colors and styles are increasingly being created every season, changing accordingly to the many trends' society generates. People and lifestyle transform rapidly, and so their expectations. With all the demanding adjustments this sector has to currently face, it seems, the industry is facing unprecedented challenges to meet consumer needs. The textile industry is one of the many industries that has the capacity to have a big impact on the environment and society. In the presents that impact leads toward the negative side. It is known that the fashion industry is responsible for 10% of global annual carbon emissions. This creates an urgency for us to reduce the effects the industry has as much as possible. One way is going back what we know from our ancestors and that is bio-dyeing. The processes of bio-dyeing successfully exploit the potential of natural biological systems, making industrial activity more environmentally friendly. This paper is the result of using the bio-dyeing method as a way to be sustainable and, at the same time, bring back the knowledge we have while using contemporane technology.




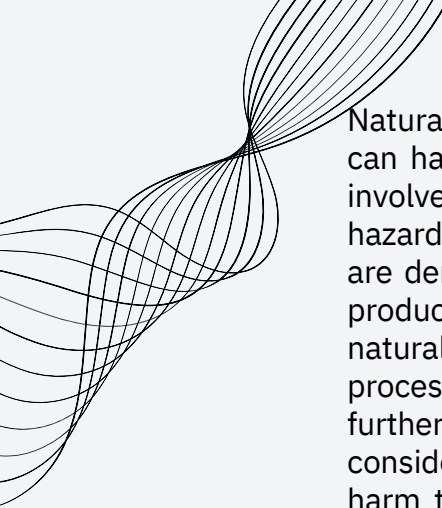
# Acknowledgements 04



This project part of this study was carried out with the support of the training program of the Academy of Textiles and Technologies in Barcelona "Fabricademy", the ZipHouse node in Moldova and the Future Technologies Activity Project, funded by USAID and Sweden.

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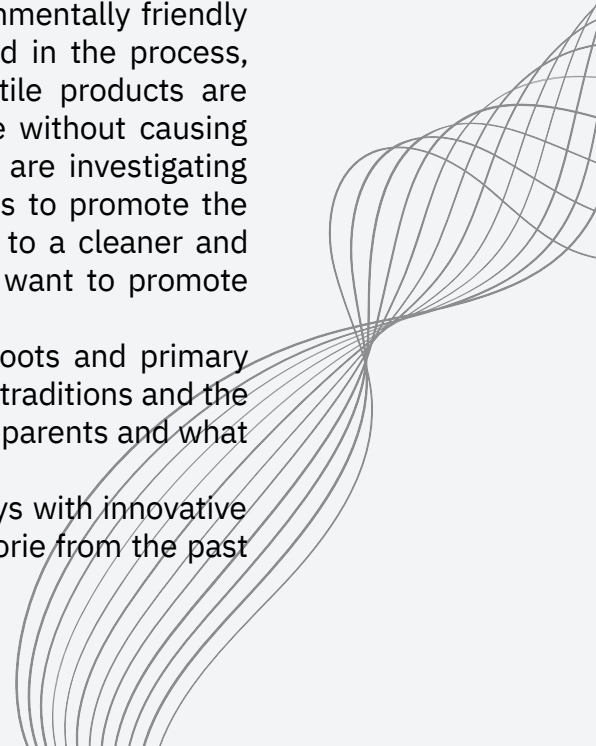




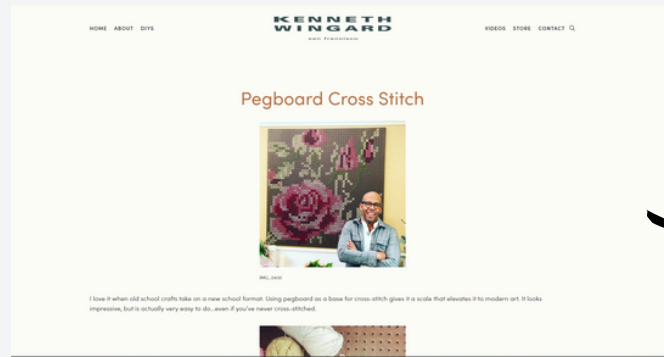
Natural dyes offer a sustainable and eco-friendly alternative to synthetic dyes, which can have a significant impact on the environment. The production of synthetic dyes involves the use of petrochemical-based dye intermediates, which can generate hazardous and toxic chemicals that pollute the environment. In contrast, natural dyes are derived from renewable sources, such as plants, insects, and minerals, and their production involves fewer chemical reactions and energy consumption. By using natural dyes, textile products can be produced using a more environmentally friendly process. Bio-mordant and natural finishing agents can also be used in the process, further reducing the environmental impact. Such eco-friendly textile products are considered sustainable because they begin and end their life cycle without causing harm to humans or the environment. Many researchers worldwide are investigating methods to produce more eco-friendly natural dyed textile products to promote the use of sustainable textiles. The use of natural dyes can contribute to a cleaner and greener environment, making it an attractive option for those who want to promote sustainability.

This project reflects on the beautiful memories. Returning to the roots and primary values of childhood. Its a project that balances between the past the traditions and the present and future. It is a combination of what I know from my grandparents and what I learned from Fabricademy.

The goal of this project is to successfully combine the traditional ways with innovative techniques. Its to give people the possibility to take a piece of memorie from the past with them to the present.



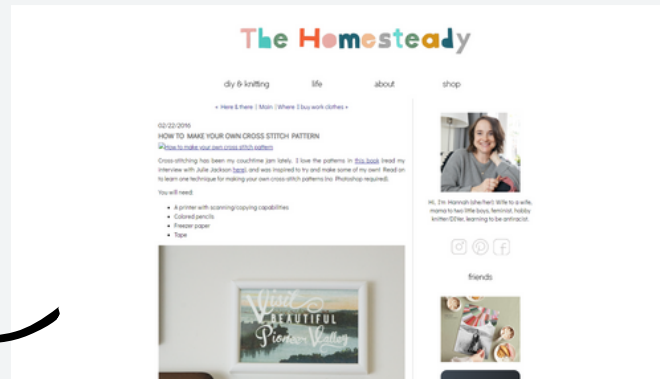
My main Artistic References which helped me progress with the work and plan my idea are the following 2 pages.

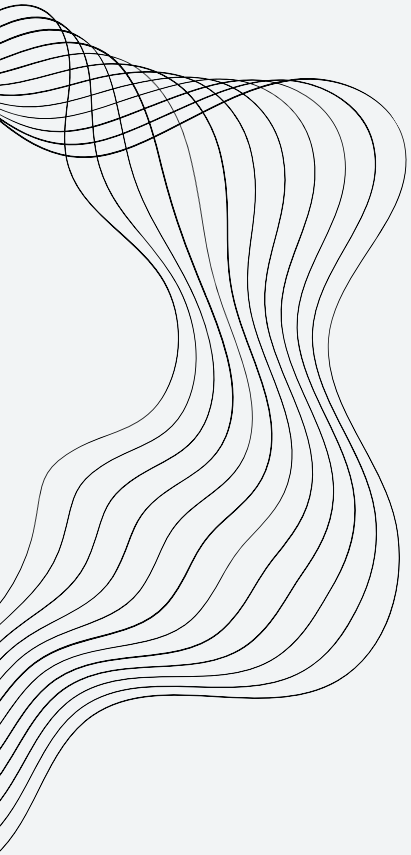


<https://www.kennethwingard.com/blog/diy/pegboard-cross-stitch>

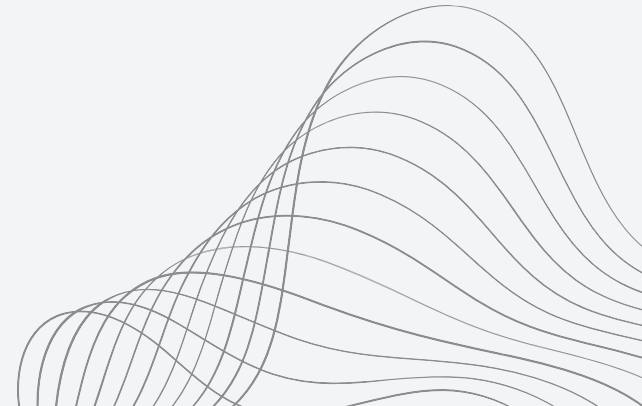


<https://www.thehomesteady.com/my-blog/2016/02/how-to-make-your-own-cross-stitch-pattern.html>





- The main problem i tried to touch with this project is a way to revive the national treasures of my country through different innovative technics and ways.
- This project comes as a reflection of what I know from my grandparents and what I learned from Fabricademy.
- The goal of this project is to successfully combine the traditional ways with innovative techniques. Its to give people the possibility to take a piece of memories from the past with them to the present.



## BILL OF MATERIALS

DESCRIPTION	Q	PRICE	TOTAL
Semi-natural thread	8	\$2	\$16
Laser cutting	48x48 cm	-	\$20
Alum	From Zip House		
INGREDIENTS			
Blueberry	360g	\$16/kg	\$6
Red Cabbage	1	\$1/kg	\$1,55
Hibiscus	70g	\$1/kg	\$1
Avocado	2	\$8/kg	\$4
Onion	1 kg	\$0.80/kg	\$0.80
Beetroot	3	\$0.40/kg	\$1.27
baking soda	1	\$0.90/kg	\$0.90

AMOUNT DUE: \$51.52



- **Pattern Maker for cross stitch, Pro** (<https://pattern-maker-for-cross-stitch-pro1.software.informer.com/4.1/?fbclid=IwAR0o8Hzbvs-v2rtDGpolWy-s5e1A0bLP-OUyjYokfM0wfZIHZEODGf8KQ4w>)
- **Laser cutter** (Fablab)

# Experimentations and Research process 10



01

—  
Selecting the  
fibers,preparing them  
and gathering the  
necessary ingredients.

02

—  
Bio-dyeing

03

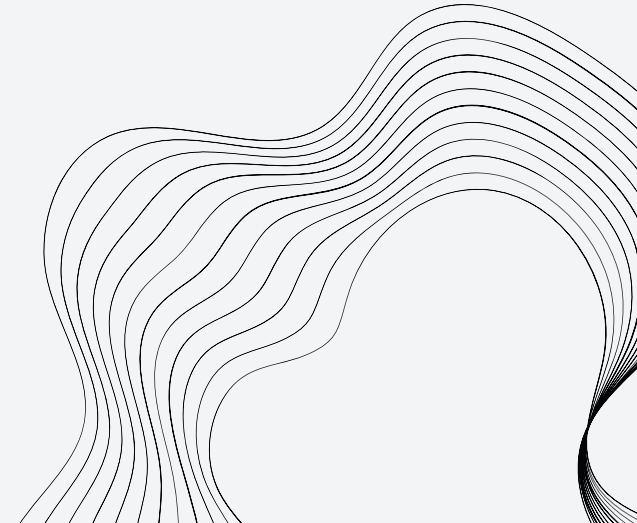
—  
Laser cutting and  
embroidery pattern  
making

04

—  
Starting the embroidery

05

—  
Next Step



# PROJECT STEPS

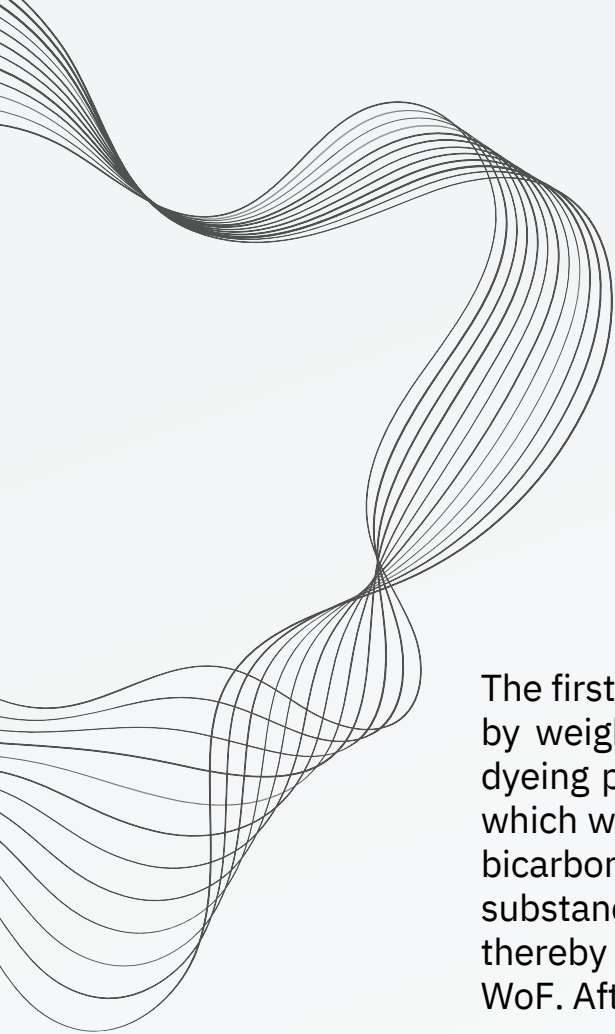
The process of bringing the project to life



## STEP 1



*Selecting the fibers, preparing them and gathering the necessary ingredients.*



## HOW TO PREPARE YOUR VEGETABLE FIBERS

**Boil the fibers 30min** in water and tannin powder. Remove and rinse. Then **boil the fibers 1h** in water and sodium carbonate (**soda**)  $\pm 2$  spoons for 4-5 liter **water**.

This process will remove waxes & oils present in the fibers.

It's ok to repeat this process twice or to start by washing the fibers at a high temperature (60\*c) in the washing machine.

Activate Windows  
Go to Settings to activate Windows.

The first step in any dyeing process is to prepare the fibers and textiles. This is done by weighting the fibers (WoF). We will need the WoF for future recipes for the dyeing process. Everything begins with the scouring process, that is a process in which we clean our fibers. For the semi natural threads i used 2 spoons of sodium bicarbonate to 4l of water. The next part is the mordanting step. This is a substance, typically an inorganic oxide, that combines with a dye or stain and thereby fixes it in a material. As my mordant I used Alum. The ratio was 10 % of WoF. After all of the above is done, I started to prepare the dye bath.

Greens



Beige



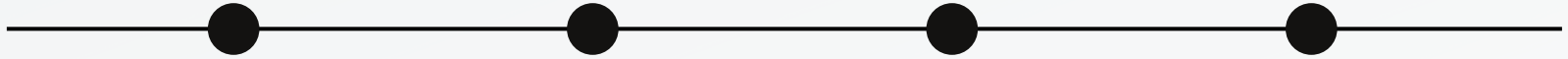
Brown



Red/Violet



**STEP 2**



*Bio-dyeing process*

First i prepared a pot with water (about half of it). When the water started to boil i added the necessary ingredient (onion peels, avocado pits, etc.) and the started to add little by little some backing soda to get the necessary color. After i was sure of the color, i dipped the threads in it and simmered them for about 2 hours and then let them cool down overnight. Next day i put them to dry out, then i created the bobbins and started my work.





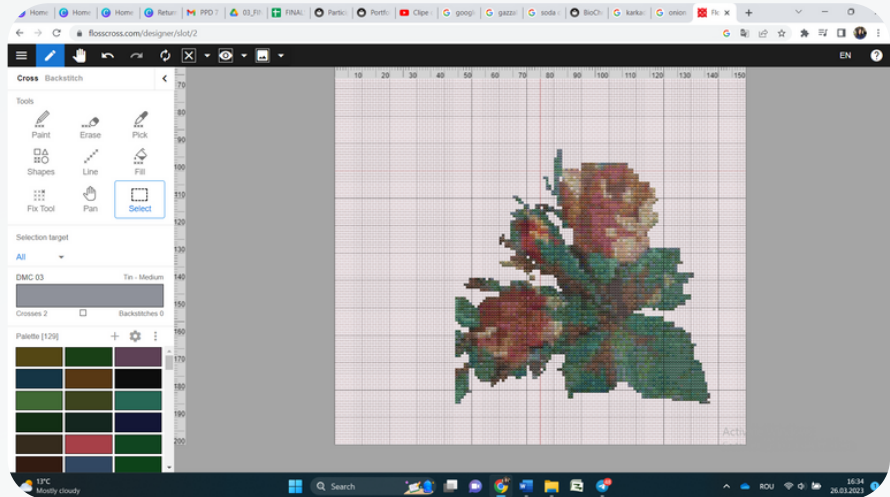
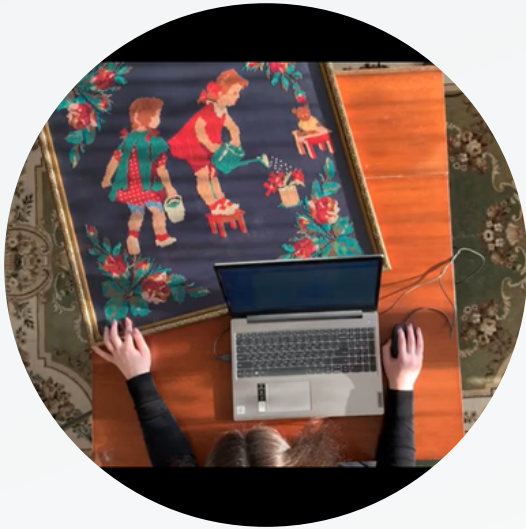
**STEP 3**

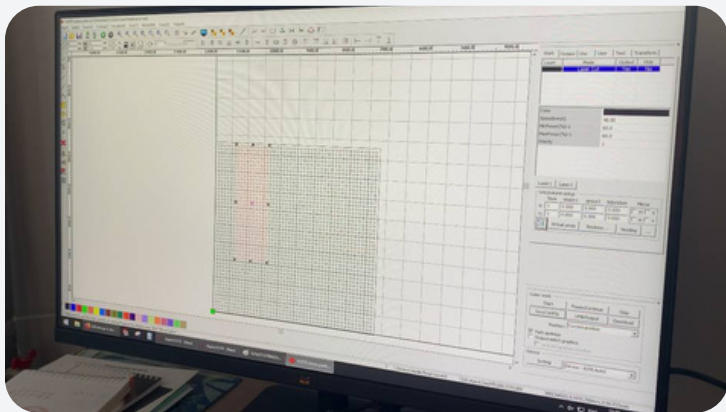


*Laser cutting and embroidery pattern making*

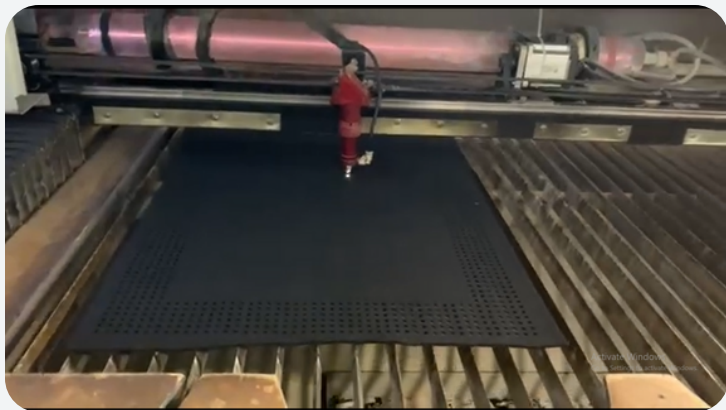


The framed embroidery was transferred into a pattern using the pattern making app.



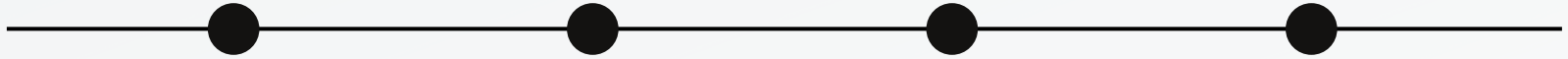


Based on the embroidery scheme i cut out the canvas at the laser so i have the base to embroider on. The dimeter of the circles was 5mm. The canvas design was made directly in the laser cuter app, so i can have the maximum width of what i can cut. My approach to this was based on the idea to get as many circles as the laser will allow me in a maximum of 50 cm width of the felt i had.

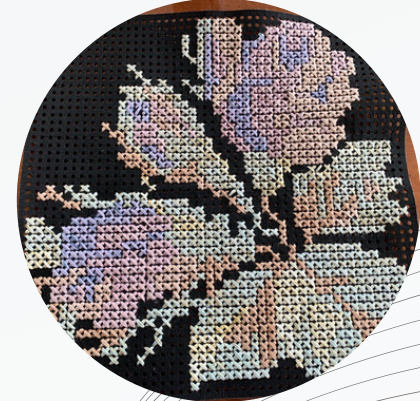
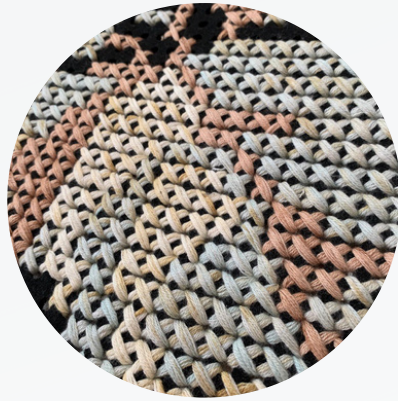
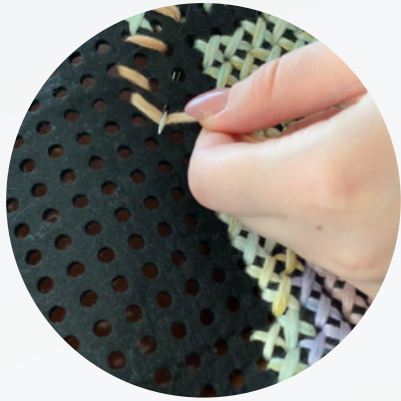
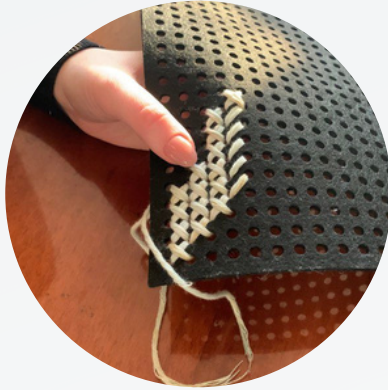




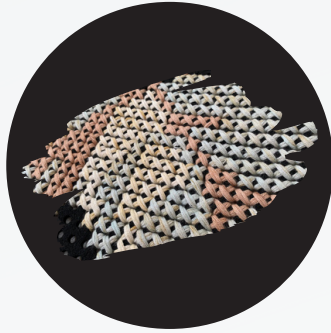
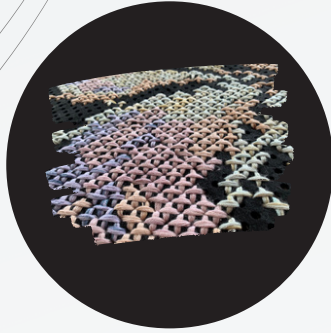
**STEP 4**



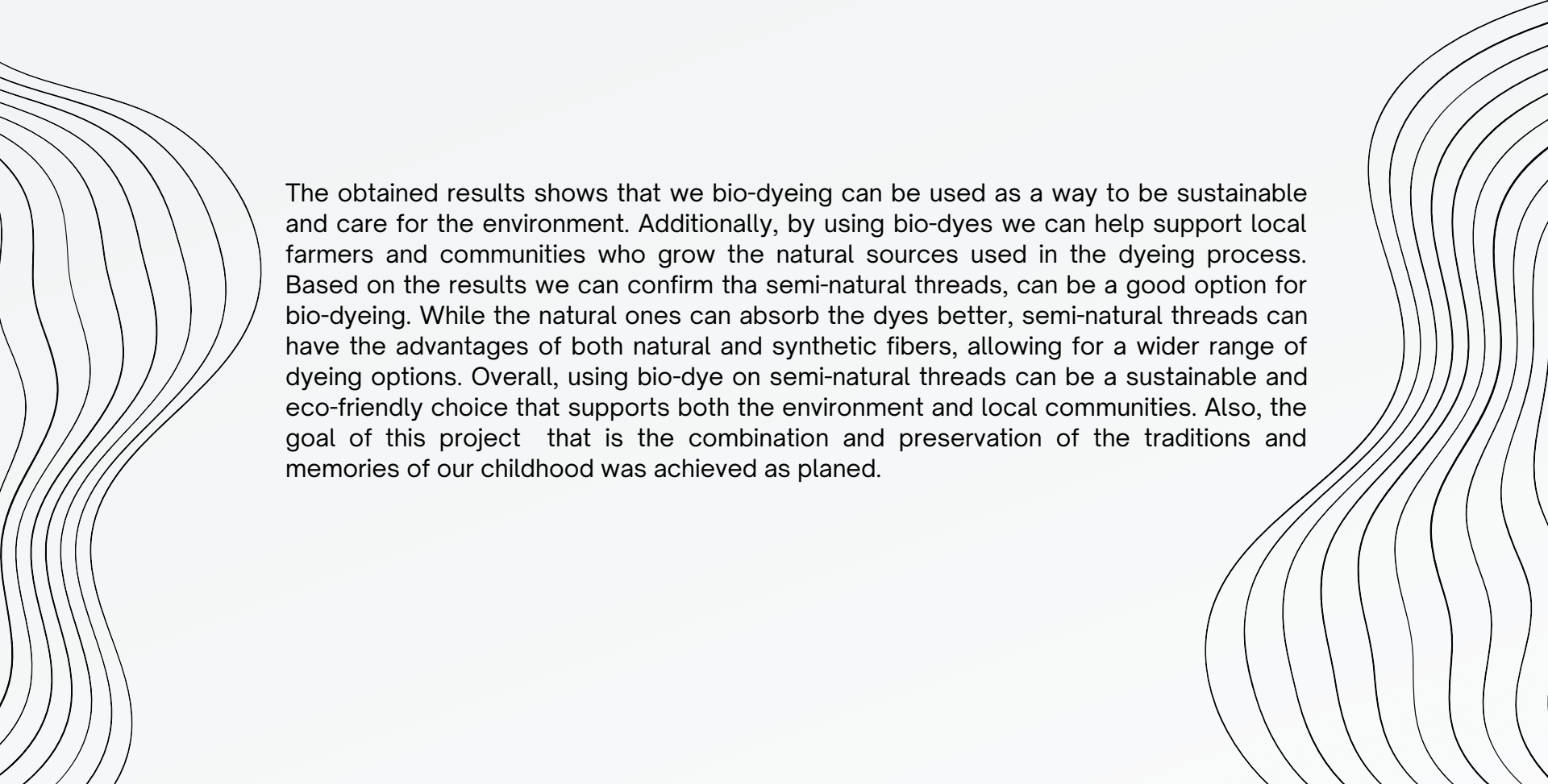
*Starting the embroidery*



# Experimentations and Research process 21



## Discussion, Conclusion 22



The obtained results shows that we bio-dyeing can be used as a way to be sustainable and care for the environment. Additionally, by using bio-dyes we can help support local farmers and communities who grow the natural sources used in the dyeing process. Based on the results we can confirm tha semi-natural threads, can be a good option for bio-dyeing. While the natural ones can absorb the dyes better, semi-natural threads can have the advantages of both natural and synthetic fibers, allowing for a wider range of dyeing options. Overall, using bio-dye on semi-natural threads can be a sustainable and eco-friendly choice that supports both the environment and local communities. Also, the goal of this project that is the combination and preservation of the traditions and memories of our childhood was achieved as planed.

1. Ashis Kumar Samanta, (2020, July). Bio-Dyes, Bio-Mordants and Bio-Finishes: Scientific Analysis for Their Application on Textiles [Online]. Available: [https://www.researchgate.net/publication/343103769\\_Bio-Dyes\\_Bio-Mordants\\_and\\_Bio-Finishes\\_Scientific\\_Analysis\\_for\\_Their\\_Application\\_on\\_Textiles#fullTextFileContent](https://www.researchgate.net/publication/343103769_Bio-Dyes_Bio-Mordants_and_Bio-Finishes_Scientific_Analysis_for_Their_Application_on_Textiles#fullTextFileContent)
2. Mazharul Islam Kiron, (2022, October). Natural Dyes: Properties, Classification, Production, Advantages and Disadvantages [Online]. Available: <https://textilelearner.net/natural-dyes-properties-types-production/>
3. Bide, M. (2014). Sustainable Dyeing with Synthetic Dyes. Roadmap to Sustainable Textiles and Clothing, pp. 81–107. [Online]. Available: [https://link.springer.com/chapter/10.1007/978-981-287-065-0\\_3](https://link.springer.com/chapter/10.1007/978-981-287-065-0_3)
4. Jadwiga Sójka-Ledakowicz, Joanna Olczyk, Jolanta Polak, Marcin Grąz, Anna Jarosz-Wilkotazka, (2015, Jan). Dyeing of Textile Fabrics with Bio-dyes, pp.120-126. [Online]. Available: [https://www.researchgate.net/publication/282285052\\_Dyeing\\_of\\_Textile\\_Fabrics\\_with\\_Bio-dyes](https://www.researchgate.net/publication/282285052_Dyeing_of_Textile_Fabrics_with_Bio-dyes)
5. Carvalho, C., & Santos, G. (2015). Global Communities, Biotechnology and Sustainable Design – Natural / Bio Dyes in Textiles. Procedia Manufacturing, 3, pp. 6557–6564. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S2351978915009579>
6. How synthetic biology is dyeing the future of fashion, [Online]. Available: <https://www.synbiobeta.com/read/how-synthetic-biology-is-dyeing-the-future-of-fashion>
7. <https://class.textile-academy.org/2023/valentina-frunze/assignments/week04/>
8. E. Florea Burduja, M. Irovan, L. Indrie, "Creativity and modern technologies for the promotion of Romanian traditional motifs" in Journal of Social Sciences, Vol.II(3), 2019, pp. 21-25.
9. <https://class.textile-academy.org/2023/valentina-frunze/project/>
10. <https://class.textile-academy.org/2023/valentina-frunze/assignments/week04/>
11. <https://www.kennethwingard.com/blog/diy/pegboard-cross-stitch>
12. <https://www.thehomesteady.com/my-blog/2016/02/how-to-make-your-own-cross-stitch-pattern.html>

My name is Valentina Frunze, i am a beginner designer based in Republic of Moldova, Chişinău. For as long as i can remember i've been passionate about the art and fashion industry. Right now i'm a student at the Technical University of Moldova trying to get my master degree in fashion and product development. At the same time, i am trying to get experience in 3D fashion. Beside this i have another passion which is oil painting.

