

Politecnico di Milano  
Design for the Fashion System



# Trinity\_Boots

Innovative technologies for customization of footwear and  
project of customizable boots

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Thesis autor: Jelena Gvozdenovic 832317

A/A 2016-2017

## 1 PART

Concept and Research of the subjects:  
customization and young traveller

## 2 PART

New technologies of production and  
innovative materials



## 3 PART

Project development

## 4 PART

Collection Urban\_Scape





## CONCEPT & RESEARCH

In the project **Trinity** I focused on millennial, their need to adapt not only in everyday surrounding but also to different weather conditions, style and occasion. As new generations are generations of explorers and adventurous travelers I considered the occasion of traveling, packing and styling on one adventure.

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**step in adventure & never compromise on your style.**



## COMPROMISING ON THE STYLE

We can say that our world is world that we tailored, customizable world. It's clear that today customer don't want just to pick one of the standardized products, they want something that match their taste in fashion and their exact needs.



## LIGHT PACKING TRAVELLER

Technology is highly present in millennial life but they are more adventurous than they ever been, they need to explore, know more and feel unique. They usually don't have condition to bring many things especially when it comes to footwear like boots.



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## CUSTOMIZATION

\tr.v. **cus tom ized, cus tom iz ing, cus tom iz es**  
To make or alter to individual or personal specifications

- Fashion and customization
- Customization of the footwear
- Categories of customization
- Some data about customized products





## FASHION AND CUSTOMIZATION

### made-to-measure

Multi-channel customer experience allows men to order their made to measure shirts and suits on-line, via mobile.



### The Suit Fitting Process

1. Initial consultation with tailoring consultant, who will take measurements and advise on the design of a suit.
2. A try-on of new suit, this is opportunity to fine-tune any desired details. On occasion may need a second fitting.
3. A simple try-on and take away that day.



### online customization

Customer could choose from among a range of styles, fabrics, finishes, and colors, and a pair of jeans could be individually manufactured based on the customer's original specifications.



## TWO MAIN TYPES OF CUSTOMIZATION



### IN TERMS OF PERFORMANCE

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This is the **most demanding** type of customization for company because in designing process customer define completely new product and production is taking more time as well.

Customer is **involved in entire process of design**, but he is not really shoe designer, because he simply chose one of many options, which would fit to standard idea of shoe.

Often it's required foot scanning in order to take most precise measurements.

### IN TERMS OF AESTHETICS

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This type of customization could be considered as "lighter" customization.

Consumer may choose the combination of colors, materials and accessories that prefer the most.

So the structure is not changed and production consider same process as those one in traditional shoe design.

Obviously this is the easiest type to be adopted by the company and also the least expensive.

**PRADA**

BAGS & TRAVEL

EYEWEAR

FOOTWEAR

MEN'S FOOTWEAR

WOMEN'S FOOTWEAR



## CUSTOMIZATION OF THE FOOTWEAR

Depending for the level of customization, first step may include taking exact and precise measurements with foot scanner.

Processed data are used for building the "structure" and provide improved performance especially in case of professional sportists.

User can choose materials, colors, patterns etc.

One of the most important things is time of delivery, and does product really reflect user order.

Using user friendly software or application is also priority. If user experience customization as tired and frustrating he will likely leave the page in case of online customization or won't repeat experience.

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Università di Milano

Design & Innovation System





10%

have tried customized prod.



30%

interested in trying customized products

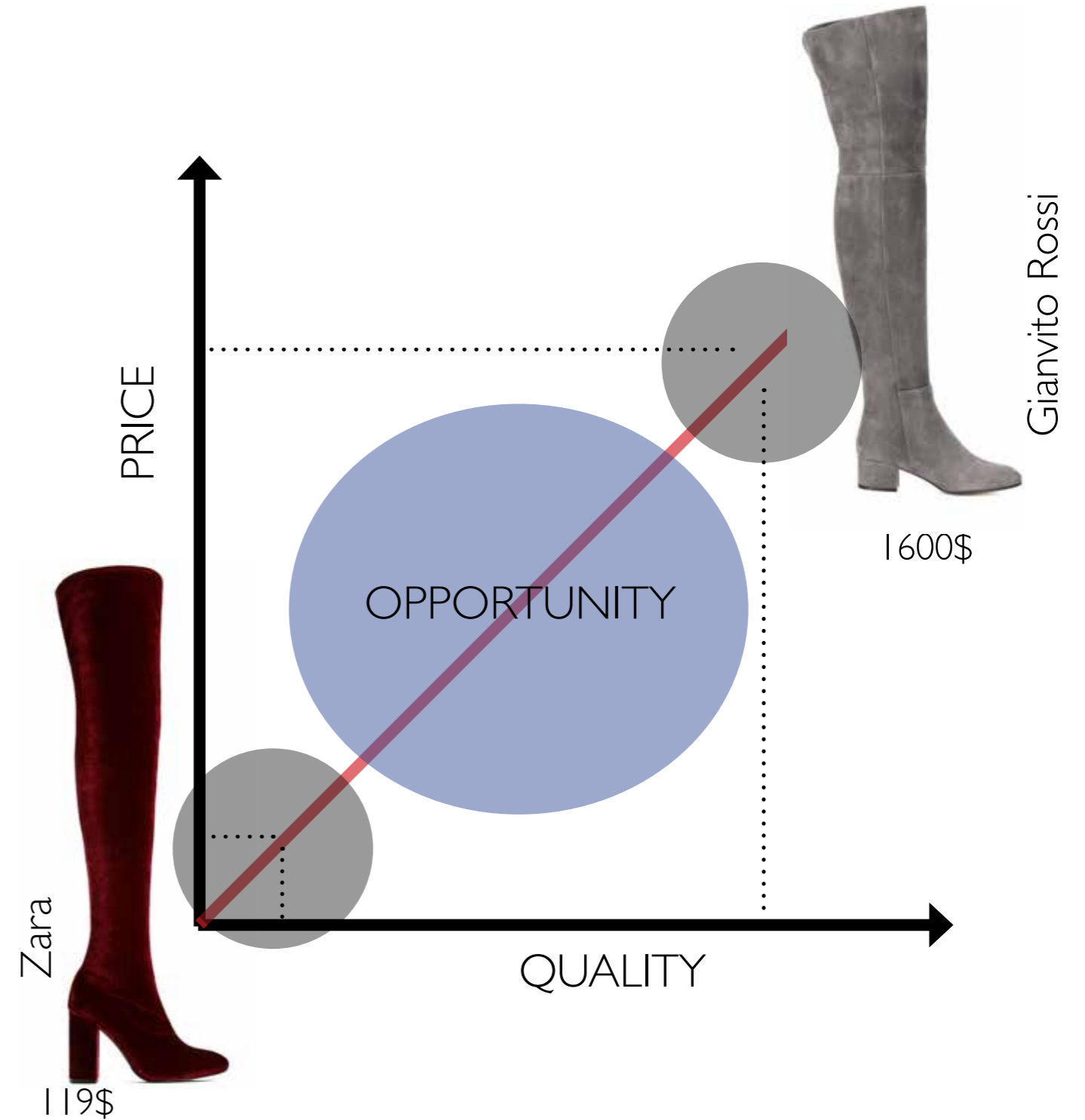


if 25%

of online sales of footwear were customized, that would equate to a market of \$2 billion per year

Customers who had customized a product online **engaged** more with the company.

They **visited** its website more frequently, **stayed** on the page longer and were more **loyal to the brand.**



## LIGHT PACKING TRAVELLER

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## MODULARITY

- Modularity as principle for footwear customization
- Modularity for light packing
- Millenial travelers statistic



# MODULARITY AS PRINCIPLE FOR FOOTWAER CUSTOMIZATION

## NIKE ID

NIKE ID is perfect example how modularity fuction in case customized foot-wear. Final product look like product produced for ecah customer specifically. But in reality model could be exploded on elements-moduls. Each modul is basically chosed and they are recombined in one whole. That strategy minimize time of production and delivery.

## SHOOZ

Shooz are made of a "Skin" and a "Sole which are detachable and interchangeable and allow you to create a style that's perfect for you and perfect for any occasion. Whether you're traveling, biking, running, working or just going out for a night on the town, you can carry around your flat-packed skins and customize



skin + sole = Shooz

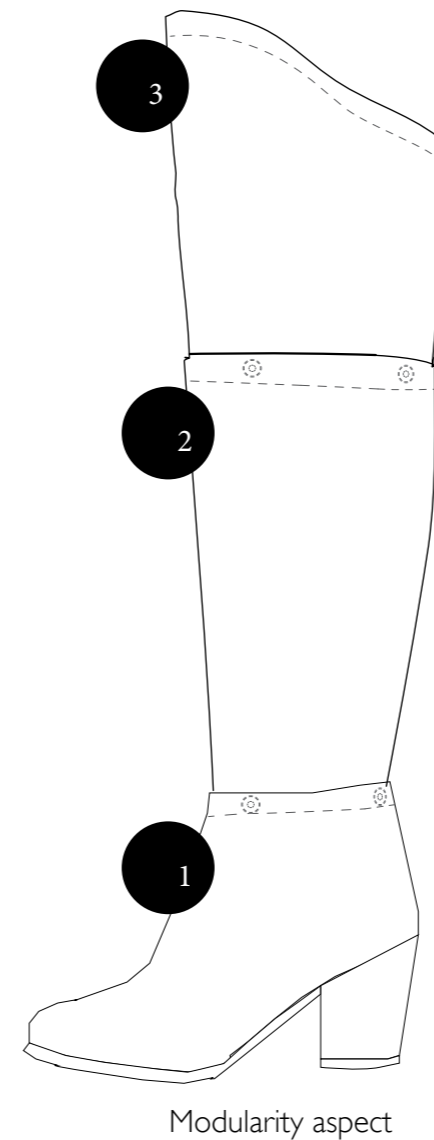


\*Survey responses from more than 34,000 young travelers from 137 countries.

“Young travellers of the millennial generation represent **20%** of international travelers,”

Majority responded that their first goal is experiencing a new culture (**86%**)

Young travelers today want, more than ever, to enrich themselves with cultural experience





## **NEW\_TECHNOLOGIES AND INNOVATIVE MATERIALS**

Usage of new technologies as Laser cutting and 3D printing and selection of innovative materials suitable for traveler in different weather conditions, inside and outside influences. Application of waterproof, breathable and durable materials.

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**step in adventure & never compromise on your style.**





**Martijn van Strien**

**Kyoung eun Hong**



**Vilbøl de Arce**

**Iris Van Herpen  
Couture SS13**

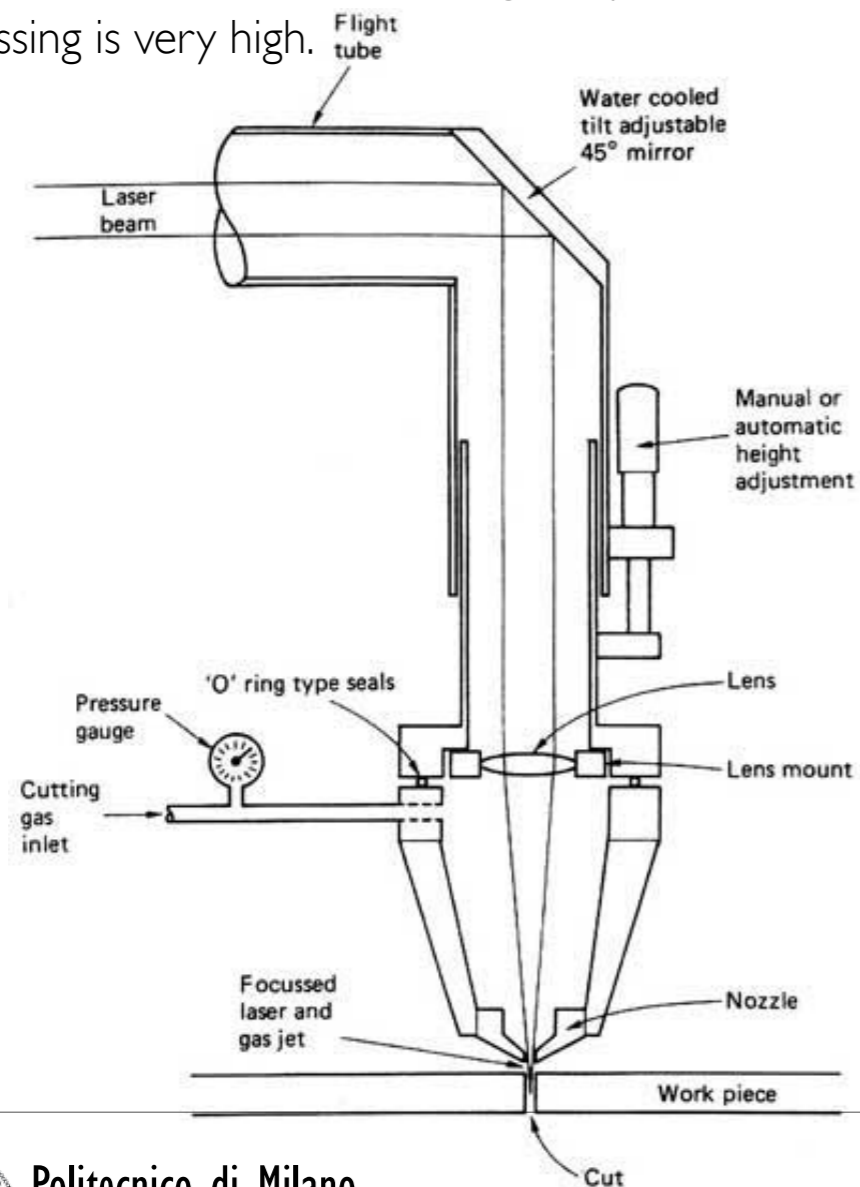
**LASERCUT Fashion**



# LASER CUT TECHNOLOGY

Laser cut is most accurate method to cut fabric. It is possible to create finest cuts of various fabrics and saving delicate details. Over time it became very popular method of production as part of manufacturing process in fashion industry.

Laser beam cuts without pressure on fabric which is very important for some of the fabrics. There is no mechanical contact with fabric so any eventual damage of fabric is avoided. Cuts intricate shapes very easily and edges are sealed during the process. Laser can work on stretch fabrics also. Loss of material during the process is minimal. The speed of processing is very high.



# LASERCUT Footwear



## 3D PRINTING

Is method of fabrication of the complex tridimensional shapes without object as a starting point, that's why it was considered always as one of rapid prototyping techniques. Starting point is actually a CAD model, which is "sliced" with special software. So techniques is based on "layer by layer" fabrication. 3D printing is based on printing a binder through a nozzle onto a bed of polymer powder, without the use of tooling.

Zaha Hadid's "Flames"



Starting from composing materials, to full color detailed finishings and even completely transparent materials, imitation of rubber and industrial plastic. In further steps basic heel shape is customized according to the concept of collection.

Material used is rubber-like because it amortize and absorb because it's flexible, but it's also very good isolator.



URBAN ARMOR 3D Printed



ERL STEWART 3D RUBBER PRINTED SHOES

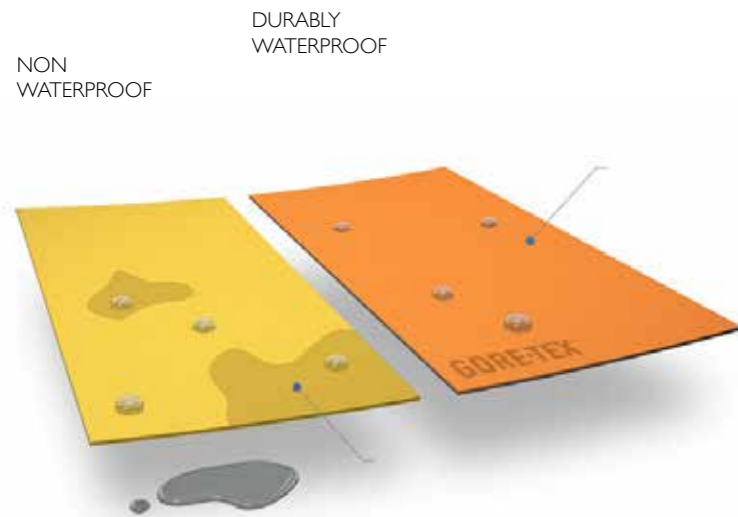




## GORE-TEX WATERPROOF

GORE-TEX technology is widely applied in footwear industry. It's used for sportswear for hiking, mountain climbing and also for everyday shoes.

Gore-Tex materials are typically based on thermo-mechanically expanded PTFE and other fluoropolymer products. The simplest sort of rain wear is a two layer sandwich. The outer layer is typically nylon or polyester and provides strength. The inner one is polyurethane (abbreviated: PU), and provides water resistance, at the cost of breathability. Early Gore-Tex fabric replaced the inner layer of PU with a thin, porous fluoropolymer membrane coating that is bonded to a fabric.

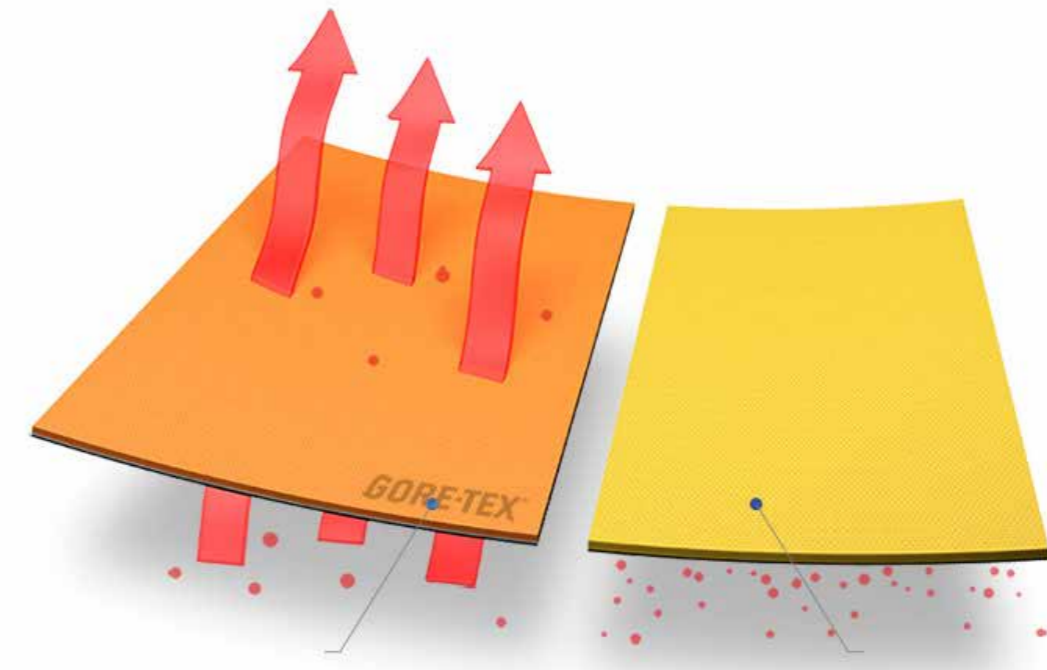


NON WATERPROOF

DURABLY WATERPROOF

## GORE-TEX BREATHABLE

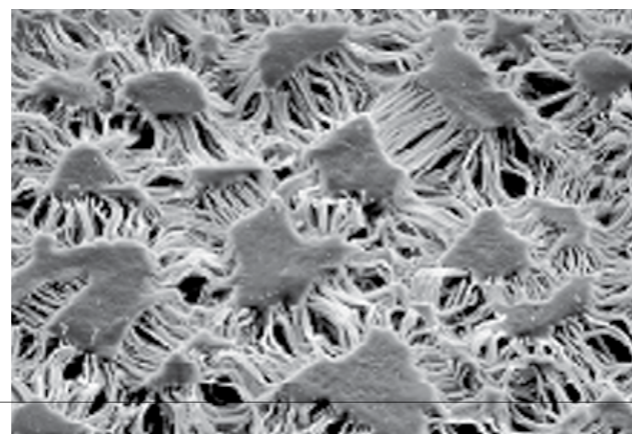
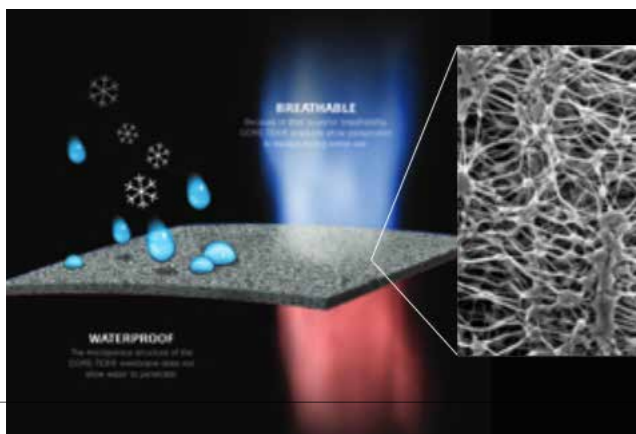
When you're active, your skin removes excess heat via perspiration. To avoid uncomfortable sweat buildup, the GORE-TEX® membrane allows the evaporating moisture to escape through the fabric. This breathability leads to more comfortable and drier skin, even during high exertion.



VERY BREATHABLE

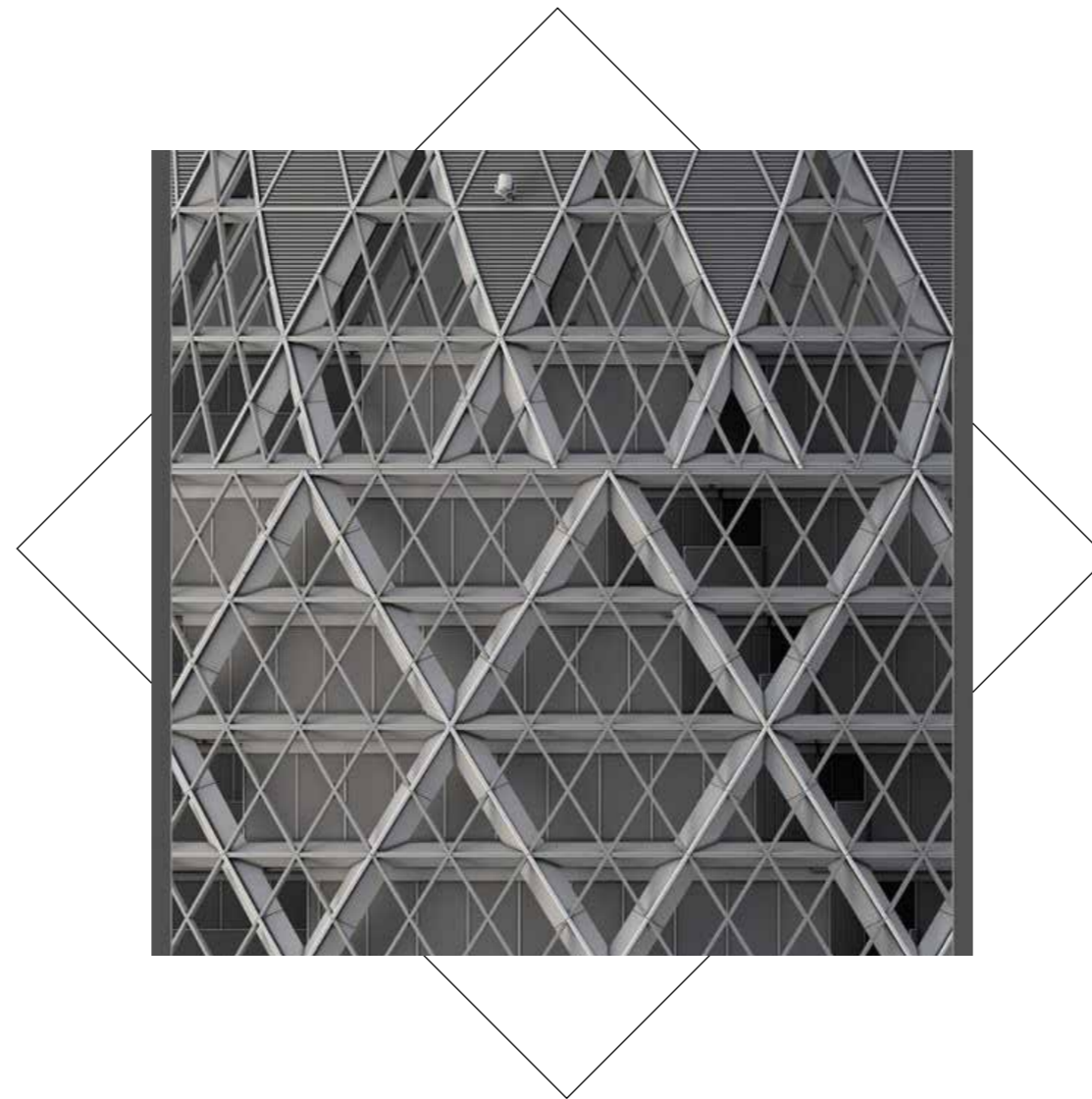
NON BREATHABLE

## GORE-TEX PRODUCTS



GORE-TEX MEMBRAN UNDER THE MICROSCOPE





## PROJECT\_DEVELOPMENT

Inpiration came from urban architecture landscape, here I will explain how estetical codes are applied trough the use of new technologies, focusing on problem solving of young urban explorer.

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**PERSONAL**



**LIGHT**



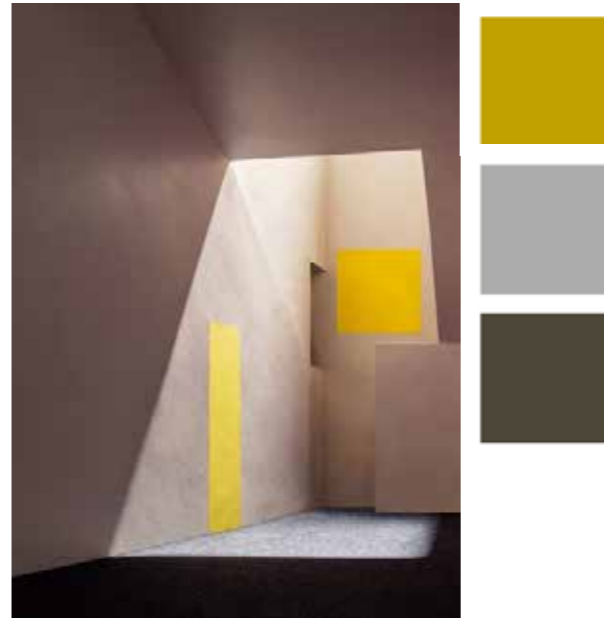
**STYLE-UP**



**WATERPROOF**

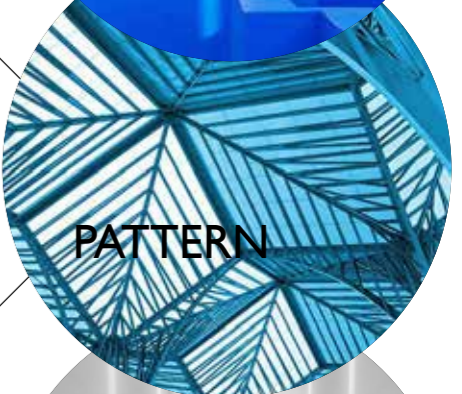
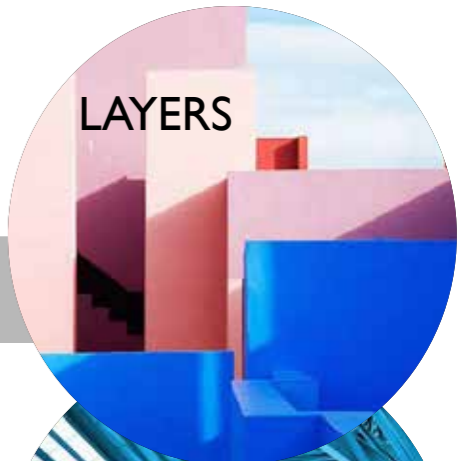
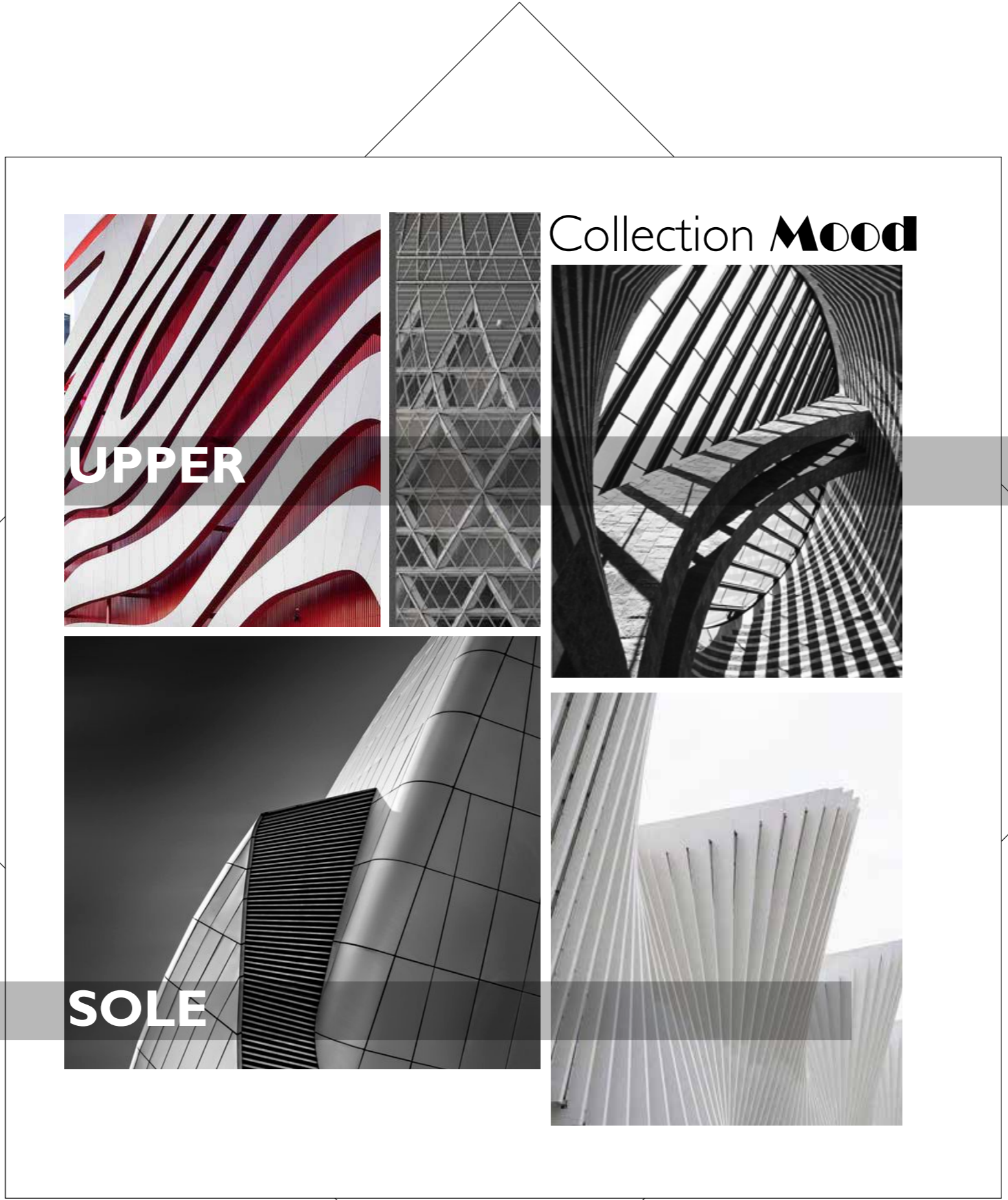
## **INSPIRATION\_URBAN ADVENTURE**





## MOOD\_URBAN SCAPE



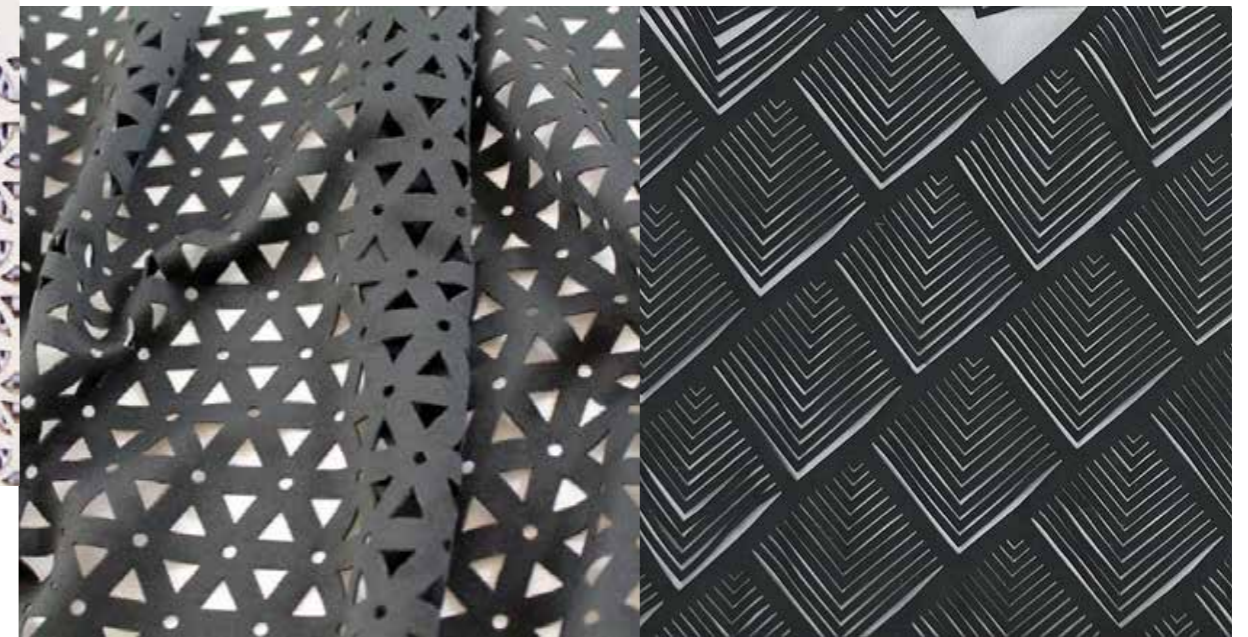
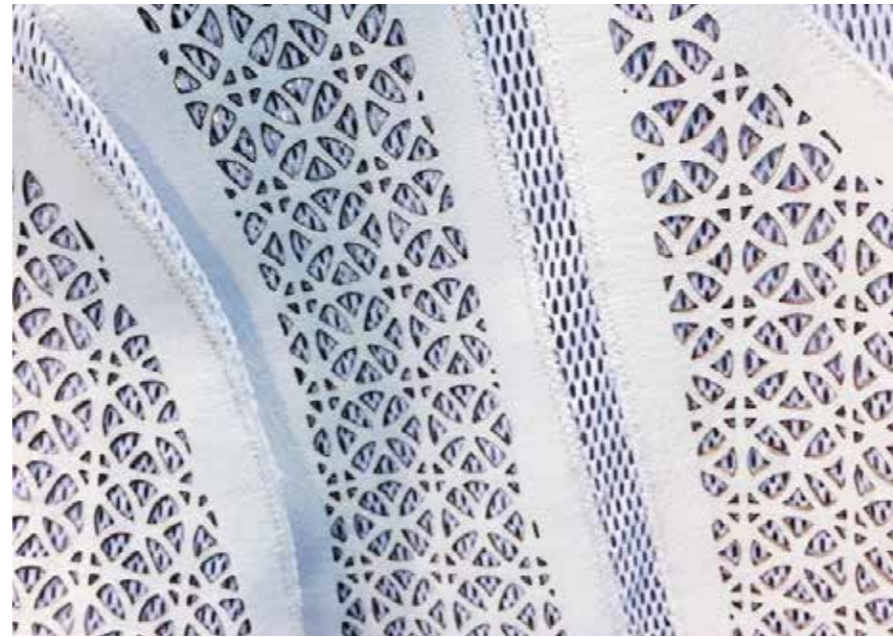


UPPER



**LAYERING** overlaying of the materials, and final effect that materials create “flow“ on the product.

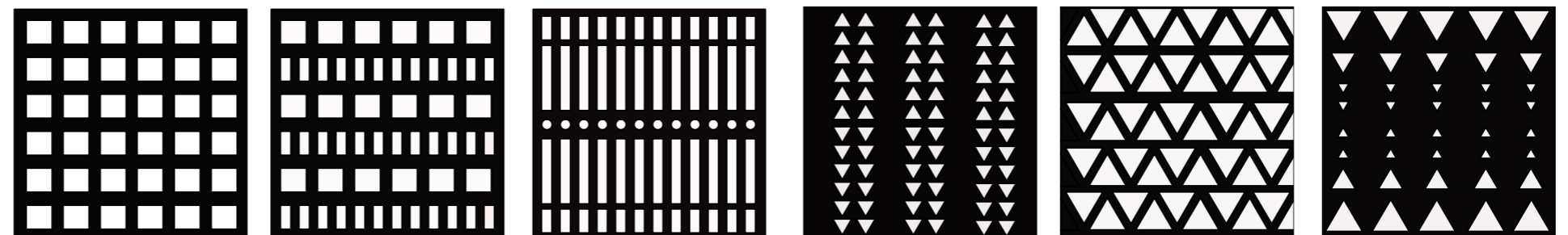
Since product is waterproof on the elements that are cut with laser it is necessary to place inside lining. This inside lining is plus possibility for creativity.



## PATTERN

For Trinity boots I created pattern inspired with simple geometric shapes and their repetition.

User can filter pattern library according to shape that dominate in design, triangle, square.



**Patterns Gallery**





**CONNECTION** to make customization horizontally and vertically possible.  
-user can choose material, colors, patterns of certain model that she desire to set an order. In this case it was vital to understand how three elements connect in terms of design so they can function all together or even when overknee element or knee element is removed.  
-user can choose any other model from the collection and recombine elements in a way that design still match and give aesthetically complete image of product.

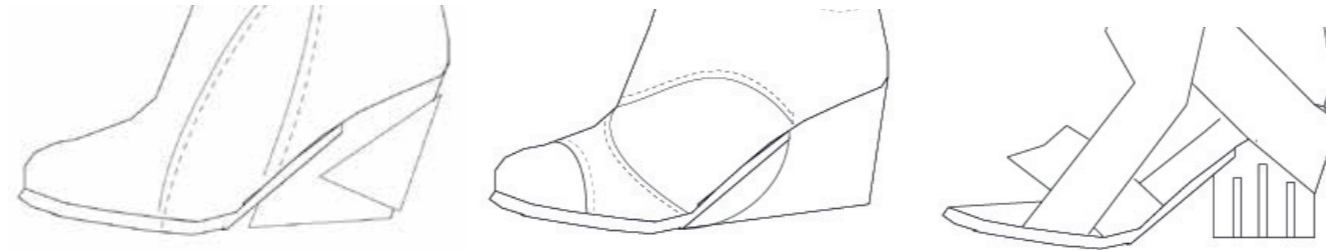
My strategy in dealing with that problem was to create big pattern that cover all boot. Touching points of all three elements always match but inside element on central part they can have completely different look.  
The key is in aligning “touchpoints“ of elements.



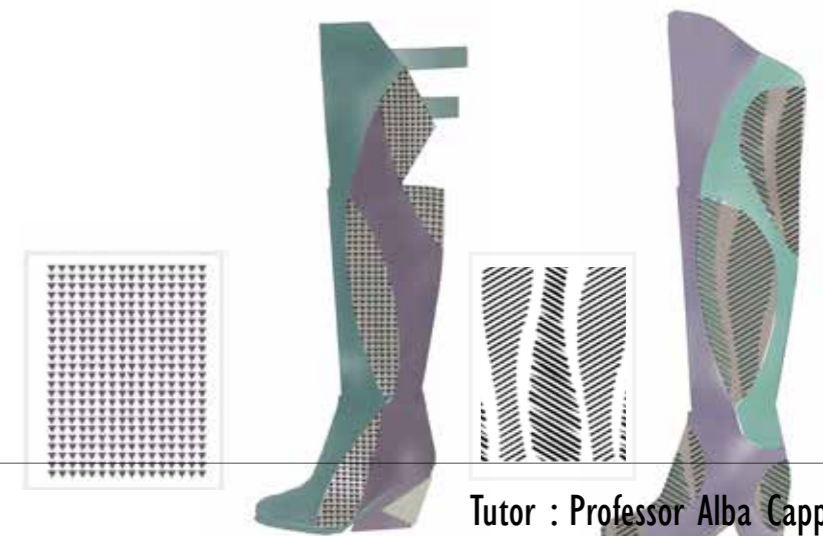
## SOLE



**STRUCTURE** of the soul and heels is done same as upperpart of boots in geometrical solid volumes. Contrary from upper where geometry is applied in flexible shapes with pattern cuts and layering, here we have tridimensional structures that recall on modern building architecture and design. Elements are printed with 3D printer with rubber like resin.



**GEOMETRY** from upper part is applied on the sole in a way that pattern from upper is overlapping with sole. And another way for this collection I used laser cut pattern that is matching with shape of the sole / heels. So if motif of triangle is present in the sole part than I repeated on the upper laser cut pattern.







## COLLECTION\_URBAN\_SCAPE

Based on all collected informations about new technologies of production and innovative materials, based on problems that I set to solve :Quick style up /don't compromise on your style and problem of light packing I developed collection Urban\_Scape. It is aimed for young dynamic traveller on their advantage on the road or everyday advantage. Product that motivate to explore and reaserch and experience travelling with more comfort and joy.

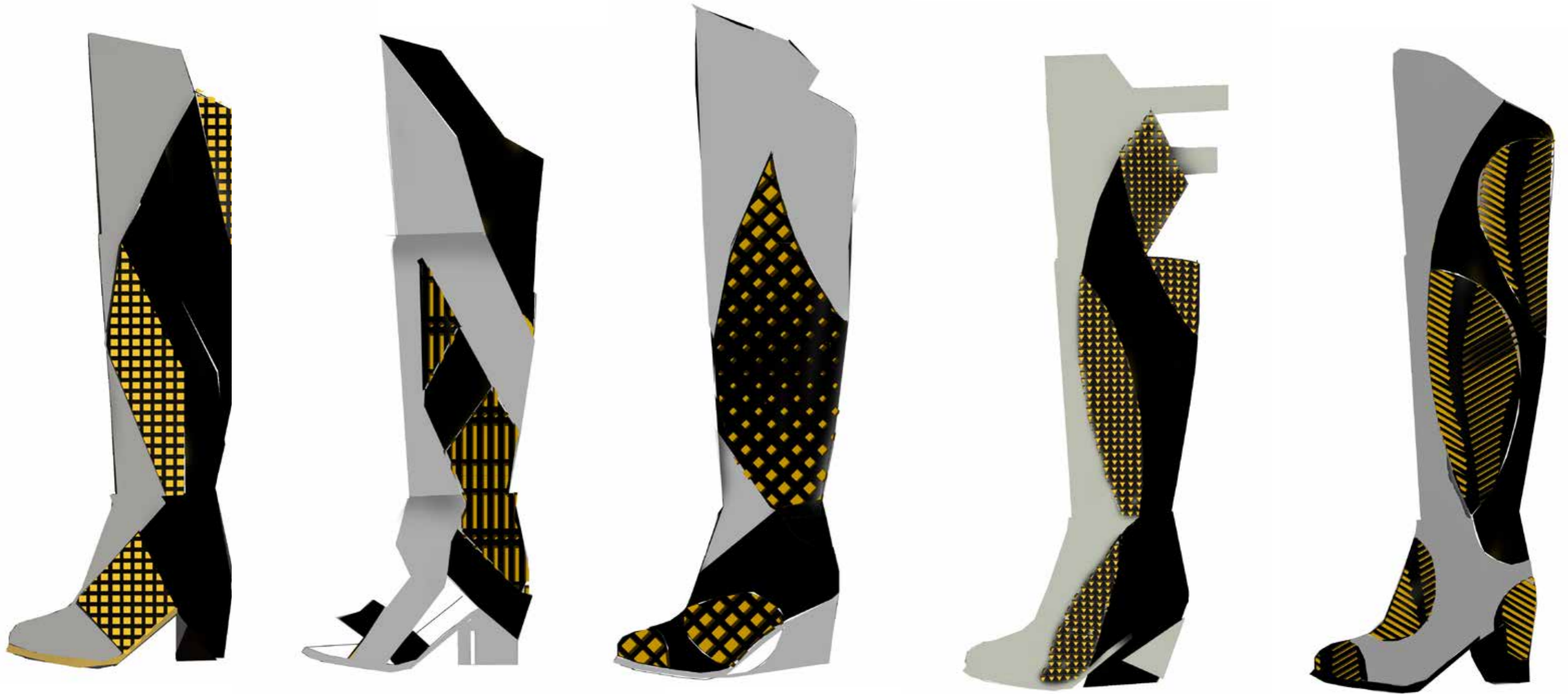
**step in adventure & never compromise on your style.**

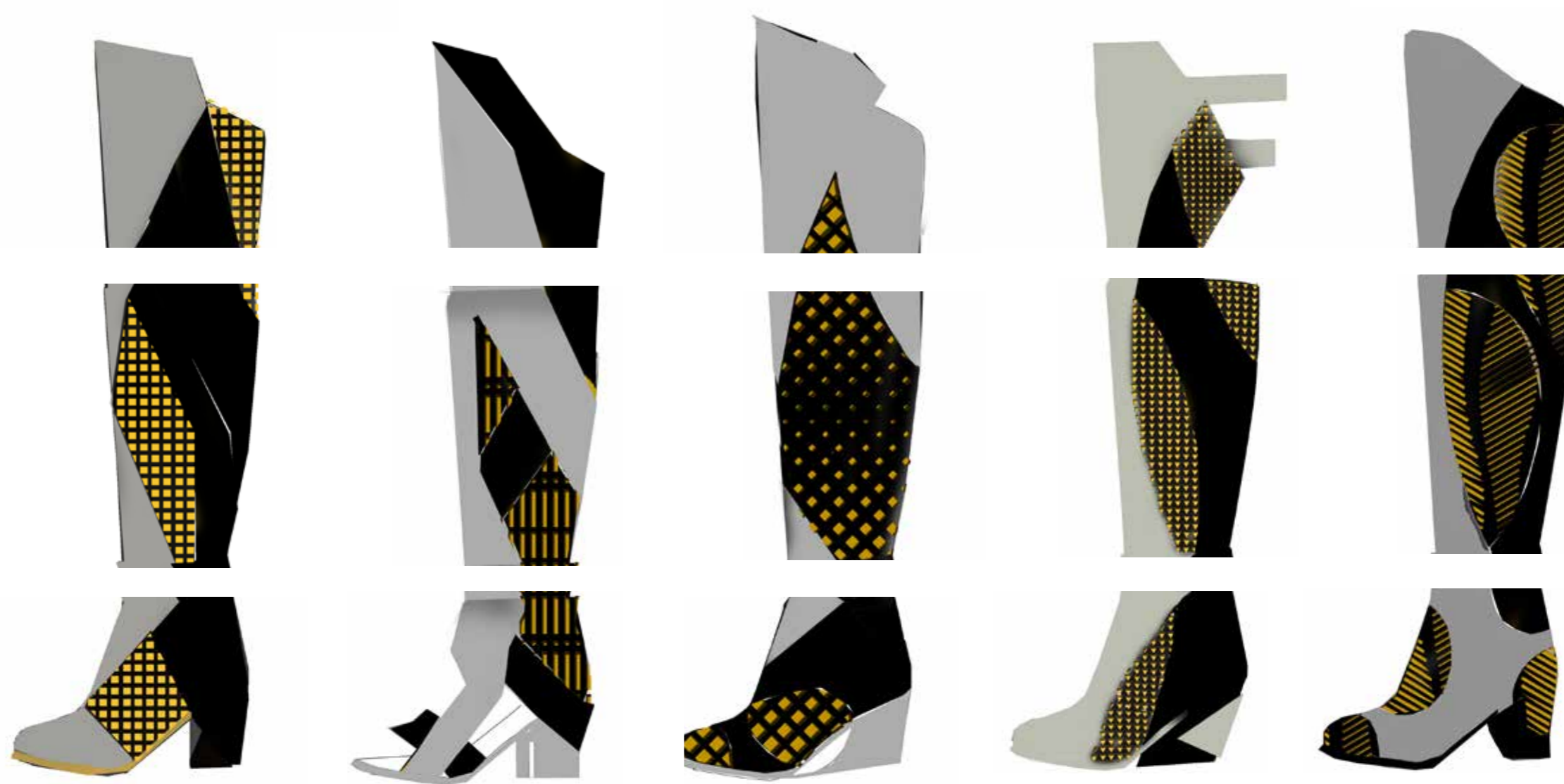


# SKETCHES



# Collection **Urban\_Scape**





**5 overknee elements, 5 knee elements and 5 ankle boots**



Result of matching different elements - gives product enriched with patterns, more geometric and architectural appearance.

# Collection **Urban\_Scape**

## Model 1

Thread colors



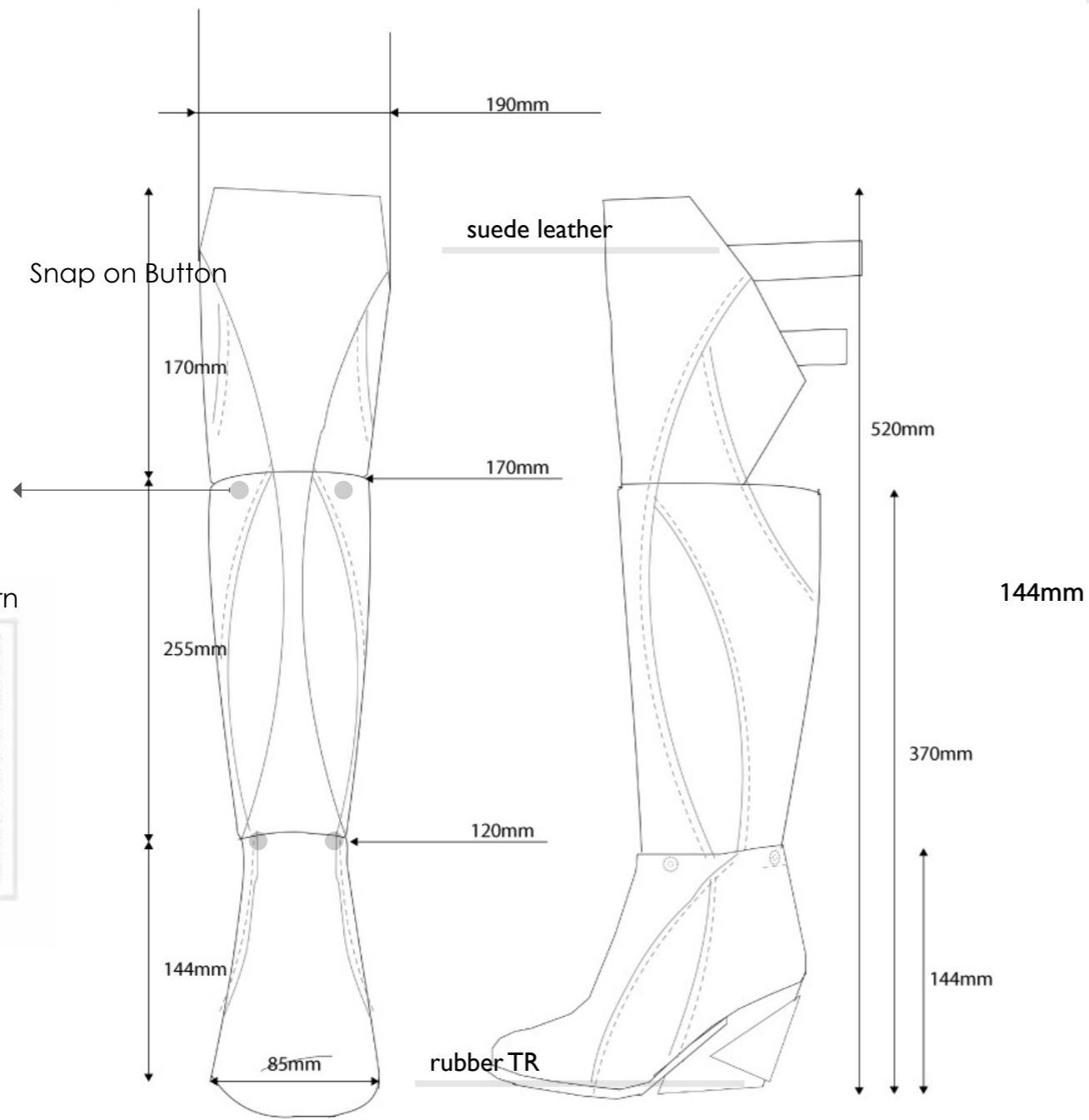
Suede Leather



Snap on Button



Laser cut pattern



# Collection **Urban\_Scape**

## Model 2

Thread colors



Suede Leather

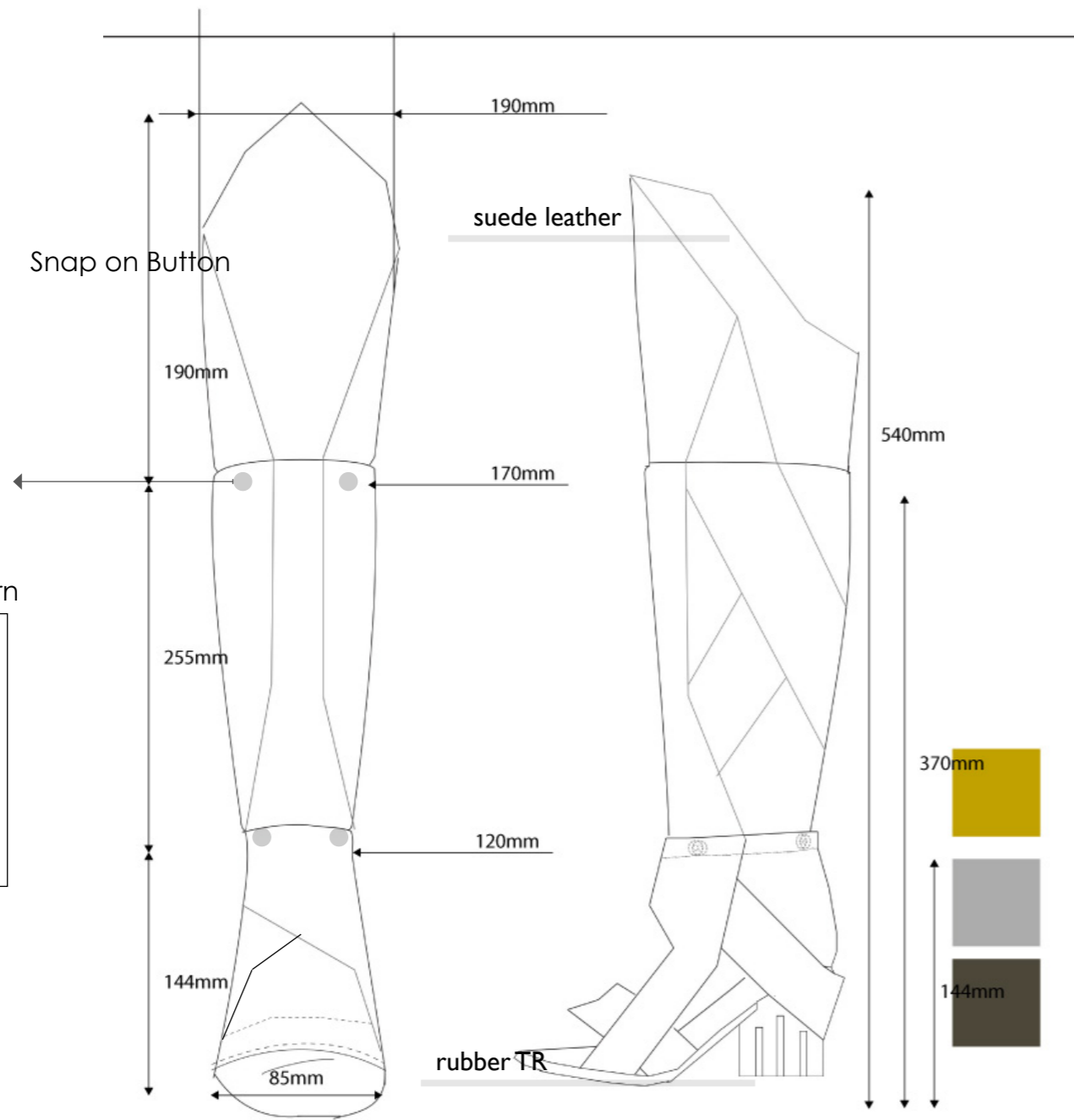
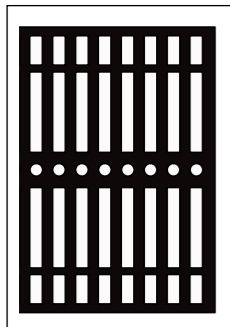


Snap on Button



Snap on Button

Laser cut pattern



# Collection **Urban\_Scape**

## Model 3

Thread colors



Suede Leather

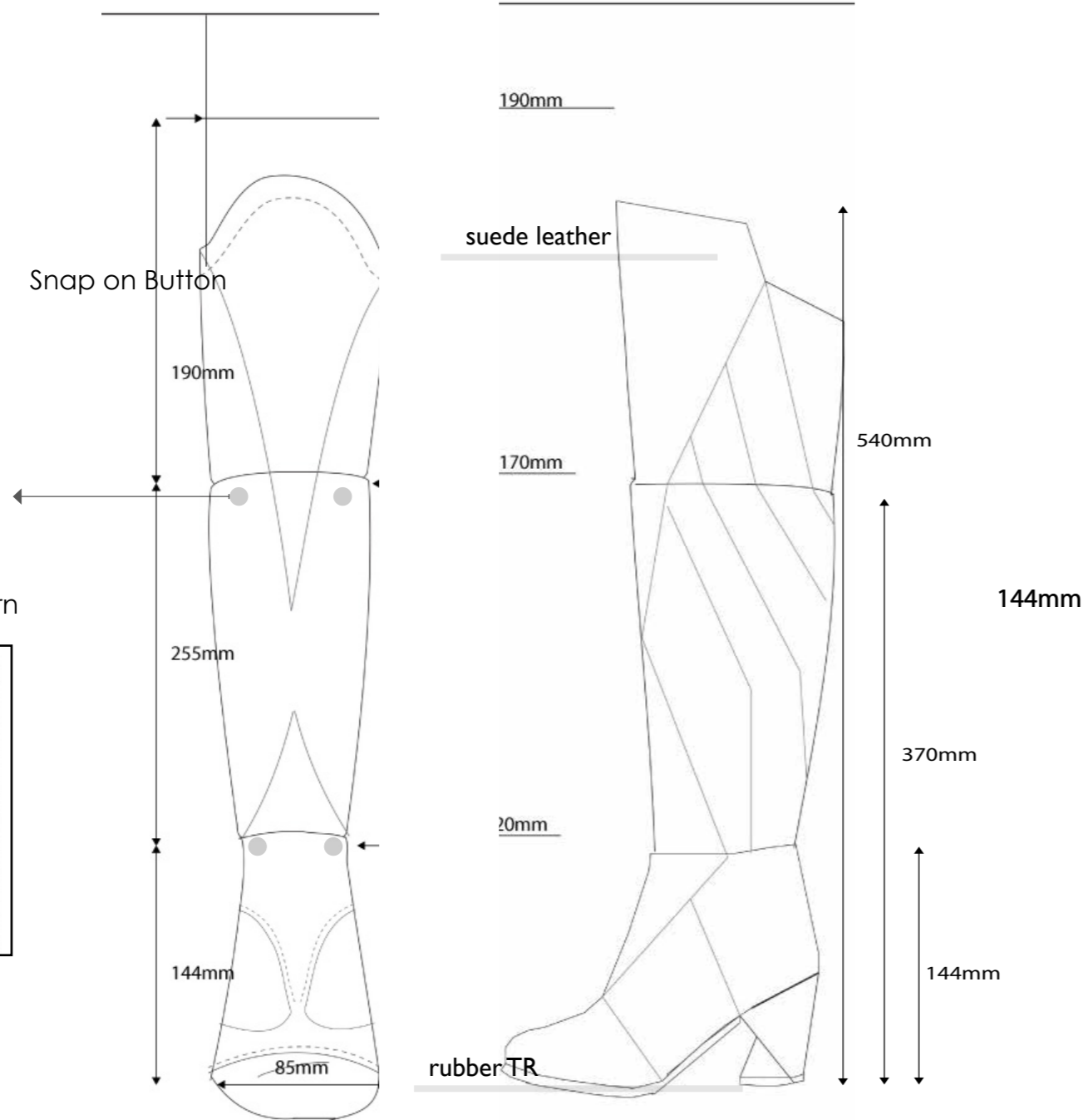
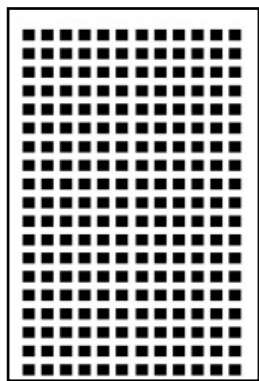


Snap on Button



Snap on Button

Laser cut pattern



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THANK YOU

