A pilot study on AutoPatternmaker: a web-based application generating customized basic block automatically

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Background

Developing patterns for a new style can be done through pattern drafting, draping, and flat pattern method (Keiser et al., 2017). The flat pattern method is most cost-effective within all the three methods because pattern makers don't have to start from body measurements each time. Basic block patterns are developed for each body type and size to accommodate various body dimensions. There are many methods to build the basic block patterns. Some commonly used basic block drafting methods include the Armstrong method (Armstrong, 2009), the metric method (Aldrich, 2015), the MacDonald (MacDonald, 2009), and the Bunka Fashion Institute method (Bunka Fashion College, 2009), to name a few. Good basic block patterns are the foundation of good production patterns.

Traditionally, block patterns are drafted manually and cut with tagboards for re-use purposes. Preparing and revising the block patterns is time-consuming. Computer-aided patternmaking programs allow basic blocks to be developed and organized in a digital environment, which makes the process a lot faster. Some programs even provide functions to link the pattern shape with body measurement so that the pattern shape will change automatically based on the new measurement values. This makes the change of basic block shapes to fit target consumer groups much easier. However, most computer-aided patternmaking programs, such as Modaris, Accumark, and Optitex, are not free, and the subscription fees are not inexpensive. Fashion entrepreneurs, researchers, and educators may not have enough funds to invest in such technology.

Much research has been conducted to improve the basic block drafting methods (Shin, 2007; Hussin et al., 2013; Griffey & Ashdown, 2006). However, the majority of the audience for these new methods are researchers who share a similar research interest. The practice and tests of these new methods by the fashion industry are very limited. Some of the reasons are because (1) the methods have not been promoted to the general public, (2) many new methods require a lot of measurements, which may not be doable if measurements are collected manually, and (3) learning new block drafting methods adds additional work to people who are familiar with mainstream patternmaking methods. JBlockCreator (Harwood et al., 2020) is an application and extensible API for the automatic drafting of custom pattern blocks. Basic block developers can use it to convert their methods into JBlockCreator programs, which can then be used by pattern makers and learners to generate customized patterns with input measurements. The application also implements common pattern drafting methods for trousers, skirts, bodices and sleeves to be used directly. JBlockCreator is free and open source and has both industrial and academic benefits. However, basic block developers should have some understanding of coding principles to be successful, which sometimes may be challenging.

Objective and rational

This project aims to promote traditional and innovative basic block drafting methods existing in academia to other researchers and educators, related industry personnel, and fashion amateur, by designing a web-based automatic basic block application and establishing a web-based communication platform. A web-based application format allows real-time updating and communication. The web-based automated basic

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block application enables users to download basic block patterns drafted automatically from a list of available methods using either standard size measurement or user input measurements. Available methods include both mainstream methods from patternmaking textbooks and newly developed methods from research papers. To release block developers' stresses of coding, the web app developer works with them individually to set up the program. To release users' stresses of collecting body measurements, users only need to input essential measurements. The web-based communication platform allows users to comment and rate on the method, which will help later users choose the method that best meets their needs. This abstract is a pilot study of the project. It tests the web app pipeline design by implementing the Armstrong method (Armstrong, 2009).

Methodology

The Armstrong (2009) method, which introduces a basic block set with five pieces, was coded in the python programming language. The python program takes the body more than 30 body measures required by the Armstrong method and computes it into 2D pattern shapes in .dxf format. The python code is hosted on Amazon Web Services (AWS), which provides on-demand computing platforms to run the code and manage the data flow.

Results and conclusion

The interface of the web app is illustrated in Figure 1. Users get to choose whether to use inputted or calculated values for non-essential measurements, such as abdomen girth, C.B. length, etc. A review panel is included for users to make comments. They can also like the method or sharing the link of the method through their social media accounts.

The screenshot shows the 'AutoPatternmaker' web application interface. At the top, there's a navigation bar with 'AutoPatternmaker' and 'Armstrong' tabs. Below the tabs, on the left, is a list of 10 input fields for body measurements, with the first five marked as required (*). The fields are: 1. Bust girth*, 2. Waist girth*, 3. Abdomen girth*, 4. Hip girth*, 5. C.F. length*, 6. Full length FT, 7. Full length BK, 8. Shoulder slope FT, 9. Shoulder slope BK, 10. New slope, 11. Bust depth, 12. Bust radius. Below the inputs are 'Generate' and 'Download' buttons. To the right of the inputs is a large black area showing a white line drawing of a pattern piece. Below the pattern preview is a 'Comment' button and a text box with the message 'The data amount is problematic for plus size.'.

Figure 1. The interface of the web app

In conclusion, a pilot study was completed on the Armstrong (2009) method to test a web-based basic block generator and communicator pipeline design. The web application allows users to download customized basic block patterns with only inputting the essential measurements. It also allows users to add comments and promote any methods they like through social media. The pilot study showed that the pipeline is processable, and the next step will be scaling the number of available basic block drafting methods in the app.

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