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INNOVATION IN FASHION DESIGN USING  
ARTIFICIAL INTELLIGENCE AND  
VIRTUAL REALITY

ИННОВАЦИИ В ДИЗАЙНЕ МОДЫ С  
ИСПОЛЬЗОВАНИЕМ ИСКУССТВЕННОГО  
ИНТЕЛЛЕКТА И ВИРТУАЛЬНОЙ  
РЕАЛЬНОСТИ

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*Abstract. This article explores the potential of using artificial intelligence (AI) and virtual reality (VR) in fashion design. The modern fashion industry is faced with problems associated with the need to attract the interest of the end consumer by creating something new, as well as introducing modern technologies. This study proposes the integration of AI and VR into the fashion design process to stimulate creativity and facilitate the development of new and original designs, as well as the adoption of modern technologies. Machine learning and deep learning algorithms used in AI can analyze vast amounts of data about fashion trends, consumer preferences and historical influences to offer designers new ideas and style variations.*

*Аннотация. Данная статья исследует потенциал использования искусственного интеллекта (ИИ) и виртуальной реальности (ВР) в дизайне одежды. Современная индустрия моды сталкивается с проблемами, связанными с необходимостью привлечения интереса конечного потребителя путем создания чего-то нового, а также внедрения современных технологий. В данном исследовании предлагается интеграция ИИ и ВР в процесс дизайна моды для стимулирования креативности и облегчения разработки новых и оригинальных моделей, а также внедрения современных технологий. Алгоритмы машинного обучения и глубокого обучения, используемые в ИИ, могут анализировать огромные объемы данных о модных тенденциях, предпочтениях потребителей и исторических влияниях, чтобы предложить дизайнерам новые идеи и вариации стилей.*

### **Integrating virtual reality into design**

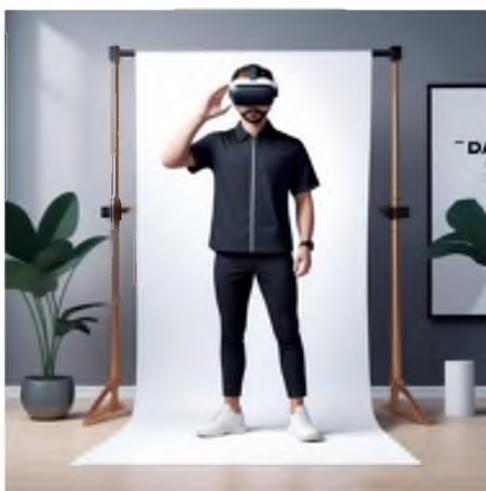
Integrating virtual reality (VR) into design will allow designers and consumers to interact with clothing in a virtual environment, opening up a new way for creativity and customer engagement.

One of the key benefits of integrating VR into design is the ability to create 3D virtual clothing models. With the help of special programs and VR technologies, designers can translate their ideas into realistic three-dimensional models that can be viewed from all angles. This allows you to more accurately imagine what the finished product will look like and make necessary changes before it is physically created.

In addition, VR allows the creation of virtual fitting rooms where consumers can “try on” different clothing styles. Using VR glasses or special apps on smartphones, people can virtually put on and try on different styles and sizes of clothing without leaving their home or store. This improves the user experience and helps you make more informed purchasing decisions.

VR integration also promotes collaboration and exchange of ideas between designers and clients. Virtual environments allow you to create virtual presentations where you can collaborate on designs and share opinions and comments in real time. This simplifies the communication process and increases work efficiency.

However, it is important to note that virtual reality cannot completely replace the physical experience. The feel of texture, quality of materials and fit are often better perceived in the real world. Therefore, VR in fashion design is an additional tool that helps in creating and visualizing models, but does not eliminate the need for physical prototyping and testing.



Picture 1 – Designer in virtual reality

Overall, the integration of virtual reality into fashion design represents an important trend that is changing the processes of creativity, visualization and purchasing. VR allows for the creation of 3D models, virtual fitting rooms and

improves communication between designers and clients. This contributes to the development of the industry and improves the quality of user experience.

### **AI in fashion design**

The use of artificial intelligence (AI) in fashion design represents a completely new approach that replaces traditional approaches to the creative process. AI can be integrated into various stages of model creation, from trend research and data analysis to generating unique designs. One example of the use of AI is the generation of unique designs. Using generative model algorithms, AI can create new and original patterns, textures and compositions. This gives designers the opportunity to experiment with unusual ideas and produce unique results that can be used in collections. Picture 2 shows examples of the generated designs.



Picture 2 – Examples of generated designs

Another example of the use of AI in fashion design is its use in analyzing large amounts of data and predicting fashion trends. Deep learning algorithms can analyze data from fashion shows, social media and shopping behavior to identify in-demand colors and styles. This helps designers create collections that best suit the preferences and expectations of consumers.

The use of AI in fashion design also helps automate processes. For example, AI can help optimize the cutting of materials, taking into account the shape of parts and minimizing waste. This reduces material costs and increases production efficiency.

### **Conclusion**

This article explored the potential of using AI and VR in innovative fashion design, as well as their combination and ability to significantly enhance the creativity of designers and speed up the process of developing new and original designs.

Integrating VR into the fashion design process allows models to be tested in a virtual environment, significantly reducing the time and cost of creating physical prototypes. Designers can more freely experiment with shape, materials, colors and textures, and see the results in real time. This allows for

more efficient prototyping and model tuning, speeding up the development process.

Innovations have been explored in the field of smart clothing that responds to the physiological parameters of the wearer and creates a comfortable and personalized experience. Smart clothing equipped with sensors and electronics not only provides health and activity monitoring, but also integrates with other devices and technologies in everyday life. This symbiosis of technology and fashion is changing our understanding of how clothing can be functional, stylish and intelligent at the same time.

In conclusion, the use of AI and VR in innovative fashion design represents a promising area of research. This helps designers create unique and attractive designs and increases the efficiency of the process. In the future, as technology improves and AI and VR become more accessible, innovation and collaboration between designers, technologists and consumers in the fashion industry is expected to increase.

The future of the fashion and design industry promises to be exciting and innovative with the use of AI, VR and smart clothing.

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