

## AR-webstore

**A.Swathi<sup>1</sup>,SK.Javid<sup>2</sup>,V.Jayanth<sup>3</sup>,R.Keerthana<sup>4</sup>,P.Alekya<sup>5</sup>, S.Sneha Rao<sup>6</sup>, Jampala  
Chaithanya<sup>7</sup>, Dr.V.Ramdas<sup>8</sup>**

<sup>2,3,4,5,6</sup>B.Tech Student, Department of CSE,BITS Warangal

<sup>1,7,8</sup>AssistantProfessorinDepartmentofCSE,BITSb Warangal

### **ABSTRACT**

The AR Webstore is a new means of online shopping that incorporates Augmented Reality (AR) technology to allow customers to have a more dynamic and interactive shopping experience. The traditional layout of online shopping has limitations since the customers cannot physically experience an online item; therefore, there is some element of uncertainty as to how the item will fit and look and work. The AR Webstore addresses this uncertainty by allowing consumers to see and interact with some of the items, in real-time, in their real physical environment. Consumers can essentially "place" the virtual item simply by using their smartphone, tablet, or web browser, whether it be a piece of furniture, an appliance, or a piece of clothing, or any other AR product, into their space, and then rotate, resize, and decide if the item is right for them before they actually purchase the item. Using AR, customers can now experience a more authentic and accurate representation of how the products will look and feel in real-life once brought into their physical environment so they will feel more comfortable in the decision of purchasing. The AR Webstore also limits disappointment in the likelihood of returning products to the customer, simply because consumers can experience "try" and interact with products "before they buy" in their own home. The AR also adds an added feature of being a more engaging shopping experience, where it is more interactive and personalized, and provides a real-time shopping experience versus looking at a static presentation of the product.

### **1.INTRODUCTION**

E-commerce has significantly transformed shopping behavior in last two decades. The convenience of shopping from home, price comparison convenience, convenience of access to many more products than stores carry, and speed of delivery, have created a retail juggernaut in online shopping. Most of the benefits of course come with certain limitations, of which the principal one remains that shoppers do not feel a physical connection to the product. Shoppers cannot touch, feel, try on, and examine the product physically before the purchase which is arguably one of the most important feature of shopping. This tactile feature of handling products and developing a sensory experience is mostly absent from e-commerce websites which are largely driven by pictures, videos and the written word. While the whole engagement of e-commerce can lead to problems for shoppers including ambiguity over size, color, texture or look and feel in their environment. This situation often results in indecision at the point of purchase which can translate into lower conversion rates and higher return rates. Furthermore, e-commerce retailers have borne the cost of returns, with the growing waves of returns due to mismatch with consumer expectations. And the hassle is also a challenge for shoppers.

### **2.PROBLEMSTATEMENT**

Although online shopping keeps rising in popularity worldwide, they still come face-to-face with

the challenges that accompany the nature of shopping solely online. Despite the benefits and

conveniences that come with online shopping, the traditional online shopping experience is still primarily focused on static imagery and videos, which cannot fully exhibit the product itself--this leads to a still unmet gap between the consumer's expectations of the product and what they actually receive. When consumers are not able to touch, feel, or engage physically with a product, there is generally a lack of confidence (and often hesitation) when it comes to making a purchase. This type of uncertainty is proportionately violated when it comes to categories in which appearance, fit, size, and the use outside-to-real-world scenario dictate product decision, which ranges from furniture to clothing/fashion pieces to electronics and beauty products

### **3. LITERATURE SURVEY**

A literature survey or literature review is a detailed account of the current research, developments, and advancements in a given field. For the AR Webstore project, the literature survey looks at existing research related to Augmented Reality (AR) in e-commerce, online consumer behavior in shopping, and the technology employed to improve the shopping experience. Through the academic and industry sources' analysis, gaps in existing research are noted and how the AR Webstore aims to fill those gaps within the existing knowledge body are determined in the literature survey.

#### **1. The Evolution of Augmented Reality in Retail and E-commerce**

Augmented Reality (AR) has evolved significantly in the past decade, transitioning from a niche technology used primarily in gaming and entertainment to a powerful tool for consumer engagement and retail innovation. In the early 2000s.

#### **2. Challenges in Traditional Online Shopping**

Although e-commerce has been increasing dramatically, conventional online shopping still has a number of challenges. Lack of physical contact with products, uncertainty of product appropriateness, and excessive return rates are some of the ongoing issues of the online shopping business.

#### **3. Technological Advances in AR for Consumer Engagement**

There have been tremendous technological leaps in the last decade, which have enabled AR to be used more easily and feasibly by both consumers and enterprises. The widespread use of smartphones, tablets, and wearables created a platform where AR could be rolled out with more ease. Advances in computer vision, artificial intelligence, and 3D graphics have also extended the usefulness of AR, enabling virtual products to look more real and interactive.

## **4. EXISTING SYSTEM**

Current AR webstore platforms use augmented reality technology to build immersive shopping experiences within the browser. Among the leading platforms and tools that support AR functionality for online shopping are:

### **1. IKEA Place:**

IKEA's AR app (also online) enables people to see how furniture would be in their houses. It uses AR to drop life-sized products into the person's space so customers can make more educated purchasing choices.

### **2. Warby Parker:**

Warby Parker has an AR-enabled "Virtual Try-On" option on their website, through which customers can try on frames using the camera of their smartphone. This application allows customers to view how frames will appear on their face prior to purchasing them.

### **3. Sephora Virtual Artist:**

Sephora's AR feature allows users to try on makeup virtually using their phone or desktop camera. This AR system applies different shades of lipstick, eyeshadow, and other makeup products, helping customers visualize their look before buying.

### **4. Google Model Viewer:**

Google's Model Viewer is a web-based solution that enables companies to display 3D models of their products right in the browser with AR capabilities. Customers are able to see these models from any angle and spot them in their surroundings with AR-capable devices.

### **5. Zara:**

Zara incorporates AR in their stores and websites, allowing customers to see 3D versions of clothes in their environment or how it looks on their avatar. Their AR experience can be

accessed on mobile devices and in-store screens.

## **5. PROPOSED SYSTEM.**

The AR Webstore, the Proposed System, will transform online shopping by incorporating Augmented Reality (AR) technology to give customers an engaging, interactive, and immersive shopping experience. The AR Webstore will solve the most significant problems of conventional e-commerce, including the inability to visualize products in actual environments, a lack of interaction with products, and uncertainty about product fit and appropriateness. Through the use of AR capabilities, the system will allow customers to make more confident purchasing decisions, lessening hesitation, building confidence, and eventually enhancing conversion rates and customer satisfaction.

### **System Overview**

The AR Webstore is an online store that combines Augmented Reality (AR) into the shopping experience. It enables customers to see products in their actual surroundings, engage with them, and make informed buying decisions, all using their mobile phone or web browser. The primary concept is to close the gap between offline and online shopping by offering a richer, more interactive experience.

### **Workflow of the AR Webstore:**

The procedure of utilizing the AR Webstore from browsing to buying includes the following steps:

1. **Browse Product Categories:** Customers can browse the app or website for products in categories like fashion, furniture, electronics, beauty, and so on.
2. **Product Selection:** After a customer chooses a product, they are redirected to the product details page, where they can view images, read descriptions, and view customer reviews.
3. **Utilize AR Tool for Visualization:** Users from the product information page can tap on the "Try it in AR" or "Visualize in Room" button. The AR tool is launched, and the user is then able to engage with the product in their actual environment via their smartphone or tablet

## **6. WORKING PROCESS**

### **STEP-BY-STEP WORKING PROCESS :**

#### **1. Display of Product on Website**

**3D Model Integration in Product Pages:** Put the 3D models inside product pages in the webstore. Users need to be able to click on a button and visualize the product using AR (for example, "View in My Room" or "Try It On").

**Enable AR Interaction Controls:** Have controls that allow customers to zoom in, turn the model, or move the model to inspect the product from any angle.

#### **2. AR Features Interaction by the User**

**AR Visualization:** Consumers start the AR tool with their cell phone or PC camera. In the case

of purchasing furniture, they can see how the product appears in the home setting by overlaying it via the camera.

**Virtual Try-On (for Fashion & Beauty):** Users can view products such as clothes, makeup, or glasses on themselves using the camera of their device. Some platforms utilize face tracking for makeup, while others can utilize full-body tracking for clothing.

### **3. Personalization and Customization**

**Enable Customization in AR:** Enable users to customize the product (e.g., alter the color of a jacket or the texture of a sofa) in real-time and see these changes in AR in real-time.

**AI Recommendations:** The system can suggest similar products or accessories based on user interaction (e.g., products tried on or looked at).

### **4. Add to Cart and Checkout**

**Add Product to Cart:** After customers are happy with the AR preview, they can add the product to their cart.

**Proceed to Checkout:** The checkout is also like normal e-commerce. Customers can view their cart, provide shipping and payment details, and finalize the purchase.

### **5. Analytics and Tracking**

**Monitor User Engagement:** The webstore monitors user engagement with the AR features. This information gives insights into which products are being tested most frequently, the time spent by users looking at AR models, and purchase patterns.

## **6. ADVANTAGES**

The AR Webstore provides several major benefits that can revolutionize the online buying experience for retailers and consumers alike:

### **1 Improved Product Visualization**

- **Real-World Context:** Customers can see how products will look in their real world, facilitating ease of judging size, fit, and beauty.

- **Improved Decision-Making:** Being able to interact with products in real-time gives customers greater assurance in their purchases, resulting in less hesitation and higher conversion rates.

### **2 Decreased Return Rates**

- With a more precise and realistic image of the product, the AR Webstore eliminates the likelihood of customers getting products that fail to live up to their expectations. This can significantly decrease return rates, which is a key issue in conventional e-commerce.

### **3 Interactive and Personalized Shopping Experience**

- The use of AI for one-to-one product recommendations guarantees that the customers are presented with suggestions that they would enjoy, driving the chances of making a purchase. The engaging AR tool enhances the fun and interactive element of shopping.

#### **4 Greater Customer Satisfaction and Loyalty**

- Providing an engaging and instinctive buying experience not only increases customer satisfaction but also promotes loyalty to the brand. When customers are more certain about their buys, they are likely to return to the platform for subsequent shopping.

#### **5 Competitive Advantage for Retailers**

- The AR Webstore will give retailers a competitive advantage by making their platform stand out from others that continue to use conventional online shopping practices. This new method can bring in new customers and increase

## **9.LIMITATIONS**

The AR Webstore has lots of wonderful advantages, but a couple of things to remember are its limitations:

1. **Device dependency:** The users must possess devices with the appropriate hardware—such as smartphones, tablets, or AR glasses—to fully utilize the AR Webstore. If one does not own these devices, they may not be able to use everything it has to offer.
2. **Internet Speed:** For superior AR experiences, a high-speed and stable internet connection is necessary, especially when it comes to rendering 3D products in real-time. In areas where internet speeds are slow, users might face difficulty in loading AR content smoothly.
3. **Developmental Complexity:** Creating AR features involves a good grasp of both e-commerce as well as AR technology. And maintaining the AR content relevant and compatible with various platforms can be an uphill task.
4. **User Familiarity:** Although AR technology is gaining popularity, not all users are aware of how to utilize it. This could result in a learning curve or some reluctance to get on board.

## **10. WORK FLOW**

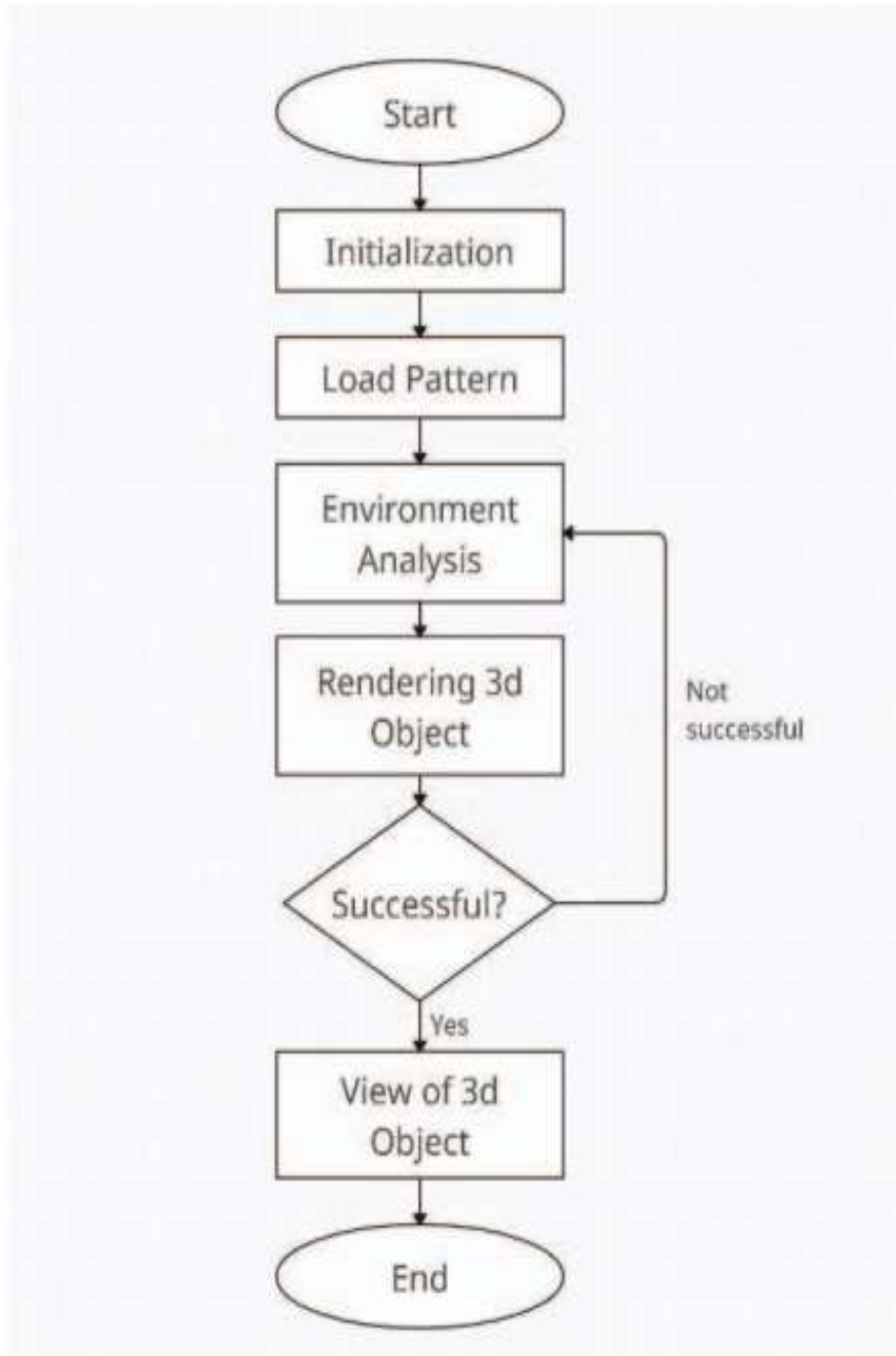


Fig. 3. *Workflow*

## 11.CONCLUSION

The AR Webstore is a giant leap in the evolution of e-commerce. With the help of Augmented Reality (AR) technology, it offers an interactive and immersive experience to customers to view products in real-life settings, virtually try them on, and make informed purchasing decisions. The ability to interact with products in a highly realistic and personalized manner solves most of the biggest issues faced by traditional e-commerce websites, such as product fit uncertainty, appearance, and appropriateness.

Although its potential is enormous, the AR Webstore does come with some limitations in the form of hardware requirements, the need for high-quality access to the internet, and the challenge of rendering some product types. These are not insurmountable obstacles, however, and ongoing advancements in AR technology as well as increasing use by consumers of AR-capable devices will continue to enhance the efficiency and accessibility of the platform.

The future of e-commerce is about creating a compelling, personalized, and seamless shopping experience, and the AR Webstore is a powerful vehicle in achieving that goal.

## 11.SYSTEMREQUIRMENTS

Category	Requirement
<b>Frontendrequirements</b>	
Languages	HTML5,CSS3,JavaScript
Browsercompatibility	Latestversionsofchrome,saffari,firefoxandedge
<b>BackendRequirements</b>	
Server environments	Node.js(version12.xorhigher)
WebGL engine	Three.js
API's	RESTfulAPIsforcommunicationbetweenfrontendand backend
<b>DatabaseRequirements</b>	
Database Management System	MangoDB
DatabaseDesign	Tablesforusers,expenses,incomeandsessions
<b>ServerRequirements</b>	
OperatingSystem	Linux,Windows,ormacOS
Node.js	Version12.xorhigher
Database	MySQL(Version5.7orhigher)
<b>HardwareRequirements</b>	

Server	Minimum 1 GB RAM (2GB recommended)
Client	Minimum 2 GB RAM
<b>Network requirements</b>	
Internet Connection	Required for accessing the server and database
Local Host Access	<a href="http://localhost:3000(frontend)">http://localhost:3000(frontend)</a>
<b>Development Tools</b>	
Code Editor	Visual Studio Code, Sublime Text, or any preferred code editor
Version Control	Git for version control and collaboration

## REFERENCES

1. Azuma, R. T. (1997). *A Survey of Augmented Reality*. Presence: Teleoperators and Virtual Environments, 6(4), 355-385.
  - o This paper provides a foundational understanding of augmented reality and its applications in various fields, including retail and e-commerce. It discusses the principles behind AR technology and its potential in enhancing user experiences.
2. Bimber, O., & Raskar, R. (2005). *Spatial Augmented Reality: Merging Real and Virtual Worlds*. A K Peters/CRC Press.
3. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima "A Brain Tumor Identification and Classification Using Deep Learning based on CNN-LSTM Method" *Computers and Electrical Engineering*, 101 (2022) 107960
4. Ramdas Vankdothu, Mohd Abdul Hameed "Adaptive features selection and EDNN based brain image recognition on the internet of medical things", *Computers and Electrical Engineering*, 103 (2022) 108338.
5. Ramdas Vankdothu, Mohd Abdul Hameed, Ayesha Ameen, Raheem, Unnisa "Brain image identification and classification on Internet of Medical Things in healthcare system using support value based deep neural network" *Computers and Electrical Engineering*, 102 (2022) 108196.
6. Ramdas Vankdothu, Mohd Abdul Hameed "Brain tumor segmentation of MR images using SVM and fuzzy classifier in machine learning" *Measurement: Sensors Journal*, Volume 24, 2022, 100440.
7. Ramdas Vankdothu, Mohd Abdul Hameed "Brain tumor MRI images identification and classification based on the recurrent convolutional neural network" *Measurement: Sensors Journal*, Volume 24, 2022, 100412.
8. Bhukya Madhu, M. Venu Gopala Chari, Ramdas Vankdothu, Arun Kumar Silivery, Veerender Aerranagula "Intrusion detection models for IOT networks via deep learning approaches" *Measurement: Sensors Journal*, Volume 24, 2022, 100412.

Sensors Journal, Volume 25, 2022, 100641

9. Mohd Thousif Ahemad ,Mohd Abdul Hameed, Ramdas Vankdothu” COVID-19 detection and classification for machine learning methods using human genomic data” Measurement: Sensors Journal, Volume 24, 2022, 100537
10. S. Rakesh <sup>a</sup>, Nagaratna P. Hegde <sup>b</sup>, M. VenuGopalachari <sup>c</sup>, D. Jayaram <sup>c</sup>, Bhukya Madhu <sup>d</sup>, Mohd Abdul Hameed <sup>a</sup>, Ramdas Vankdothu <sup>c</sup>, L.K. Suresh Kumar “Moving object detection using modified GMM based background subtraction” Measurement: Sensors ,Journal, Volume 30, 2023, 100898
11. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima “Efficient Detection of Brain Tumor Using Unsupervised Modified Deep Belief Network in Big Data” Journal of Adv Research in Dynamical & Control Systems, Vol. 12, 2020.
12. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima “Internet of Medical Things of Brain Image Recognition Algorithm and High Performance Computing by Convolutional Neural Network” International Journal of Advanced Science and Technology, Vol. 29, No. 6, (2020), pp. 2875 – 2881
13. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima “Convolutional Neural Network-Based Brain Image Recognition Algorithm And High-Performance Computing”, Journal Of Critical Reviews, Vol 7, Issue 08, 2020 (Scopus Indexed)
14. Ramdas Vankdothu, Dr. Mohd Abdul Hameed “A Security Applicable with Deep Learning Algorithm for Big Data Analysis”, Test Engineering & Management Journal, January-February 2020
15. Ramdas Vankdothu, G. Shyama Chandra Prasad “ A Study on Privacy Applicable Deep Learning Schemes for Big Data” Complexity International Journal, Volume 23, Issue 2, July-August 2019
16. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima “ Brain Image Recognition using Internet of Medical Things based Support Value based Adaptive Deep Neural Network” The International journal of analytical and experimental modal analysis, Volume XII, Issue IV, April/2020
17. Ramdas Vankdothu, Dr. Mohd Abdul Hameed, Husnah Fatima” Adaptive Features Selection and EDNN based Brain Image Recognition In Internet Of Medical Things “ Journal of Engineering Sciences, Vol 11, Issue 4 , April/ 2020 (UGC Care Journal)
18. Ramdas Vankdothu, Dr. Mohd Abdul Hameed “ Implementation of a Privacy based Deep Learning Algorithm for Big Data Analytics”, Complexity International Journal , Volume 24, Issue 01, Jan 2020
19. Ramdas Vankdothu, G. Shyama Chandra Prasad” A Survey On Big Data Analytics: Challenges, Open Research Issues and Tools” International Journal For Innovative Engineering and Management Research, Vol 08 Issue 08, Aug 2019.
20. Vankdothu, R., Hameed, M.A. “An Effective Congestion and Interference Secure Routing Protocol for

Internet of Things Applications in Wireless Sensor Network “ Wireless Personal Communication Journal 140, 143–161 (2025)

21. Vankdothu, R., Bhukya, H. & Bhukya, R.R. “Hybrid TDR-MI Based Wireless Sensor Network for Underground Water Pipeline Leakage Detection and Localization Using Pressure Residuals and Classifiers Wireless Personal Communications 139, 803–823 (2024).
22. Vankdothu, R., Cheng, X. “Energy Efficient TDMA and Secure Based MAC Protocol for WSN Using AQL Coding and ASGWI Clustering”. Wireless Personal Communications 136, 2125–2143 (2024)
23. Vankdothu, R., Hameed, M.A., Fatima, H. *et al.* Multicast Scaling in Heterogeneous Wireless Sensor Networks for Security and Time Efficiency. Wireless Personal Communications (2025).
24. Vankdothu, R., Hameed, M.A., Fatima, H. *et al.* Multicast Scaling in Heterogeneous Wireless Sensor Networks for Security and Time Efficiency. Wireless Personal Communications (2025)
25. Ramdas Vankdothu, Mohd Abdul Hameed” Brain MRI Images for Tumor Detection using Storage Optimization Technique”, Mobile Radio Communications and 5G Networks, Lecture Notes in Networks and Systems, 425-437, Springer .
26. Bandi Krishna , Ramdas Vankdothu , Varun Revuri and B. Prashanth” A brain tumor identification using convolution neural network in the deep learning” MATEC Web of Conferences 392, 01131 (2024) ,<https://doi.org/10.1051/mateconf/202439201131> ICMED 2024

## Bibliography



I am Sk.Javid from the Department of Computer Science and Engineering Currently, pursuing 3<sup>rd</sup> year at Balaji Institute of Technology and Science. My research is done based on “AR WEBSTORE”.



I am V. Jayanth from the Department of Computer Science and Engineering Currently, pursuing 3<sup>rd</sup> year at Balaji Institute of Technology and Science. My research is done based on “AR WEBSTORE”.



I am R. Keerthana from the Department of Computer Science and Engineering Currently, pursuing 3<sup>rd</sup> year at Balaji institute of Technology and Science. My research is done based on “AR WEBSTORE”.



I am P. Alekha from the Department of Computer Science and Engineering Currently, pursuing 3<sup>rd</sup> year at Balaji Institute of Technology and Science. My research is done based on “AR WEBSTORE”.



I am S. Sneha Rao from the Department of Computer Science and Engineering Currently, pursuing 3<sup>rd</sup> year at Balaji Institute of Technology and Science. My research is done based on “AR WEBSTORE”.