iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** V **Month of publication:** May 2026

DOI: https://doi.org/10.22214/ijraset.2026.81700

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue V May 2026- Available at www.ijraset.com

Craft Bid:An In-Depth Analysis of Online Auction System-Based Website for Chhattisgarh Arts and Crafts

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Abstract: ***Chhattisgarh's tribal arts and crafts heritage is rich and varied, spanning Bastar wood and metal work, bamboo, terracotta, and tribal paintings[1][2]. Yet artisans often lack market access. This report analyzes target users (artisans and buyers), the competitive landscape (e.g. Amazon Karigar, India Handmade, Craftsvilla, GoSwadeshi, AUTH India etc.), and legal requirements (auction laws, e-commerce regulations) in India. We propose a MERN-stack (MongoDB, Express, React, Node.js) architecture with a REST API and JWT-based auth, emphasizing scalability, security (OWASP best practices[3], PCI DSS compliance), and accessibility (WCAG 2.1 guidelines[4]). The report details system design (ER model, API endpoints), UX/UI flows for auctions and bidding, SEO/performance optimizations, and platform operations (seller KYC, logistics, dispute resolution). A development timeline, budget/resource estimates, and risk mitigation plan are included. This comprehensive plan grounds itself in official sources and industry examples, while noting where specifics (e.g. certain policies) are unspecified.***

I. INTRODUCTION

Chhattisgarh has a diverse, ancient handicraft tradition. Bastar (southern Chhattisgarh) is world-renowned for *tribal Bastar art*, practiced by local communities in wood, bamboo, metal, and terra-cotta[1]. For example, Bastar wood carving (teak/siwan wood) is a traditional craft with a GI tag (2008)[2]; Dhokra (bell-metal) casting from Kondagaon and Raigarh is internationally famous[5]. Bamboo weavings, clay pottery (e.g. Surguja/Edka village pottery[6]), murals (Rajwar tribe), cowrie craft (Banjara tribe) and tattoo art (Godna) are also notable. The Chhattisgarh Handicraft Development Board (CGHDB) actively supports artisans: it runs training schemes, *Shabari* emporia in state cities and Delhi, and artisan cooperatives to improve design and market access[7]. Despite these, many artisans still sell only at local markets (haats); online platforms could broaden their reach.

The Chhattisgarh Arts and Crafts Live Auction Website is a dynamic web platform designed to promote and sell traditional handicrafts of Chhattisgarh through real-time online auctions. The state is known for its rich cultural heritage, including Bastar art, Dhokra metal craft, terracotta, tribal paintings, and handloom products. This platform aims to connect local artisans directly with buyers across the world, eliminating intermediaries and ensuring fair pricing.The main objectives of this platform are:

- To digitally showcase traditional arts and crafts
- To provide a live auction system for transparent buying and selling
- To support local artisans and tribal communities
- To create a global marketplace for regional handicrafts

II. TARGET USER AND PERSONAS

1) Artisan Sellers: Rural/traditional craftsmen and craftswomen (e.g. Bastar metalworkers, Kondagaon weavers) seeking wider markets. Typically, less tech-savvy; may require training. Example persona: *Ramu, a 45-year-old Bastar woodcarver who must upload his products and manage bids with minimal technical friction.*

2) Buyers / Bidders: This includes urban Indians and overseas customers valuing authentic handicrafts. They range from middle-class home decorators to collectors. Example: *Priya, a 30-year-old urban professional interested in a Dhokra statue, who shops on mobile and expects clear bid information and secure payments.*

3) Intermediaries/NGOs: Handicraft cooperatives, NGOs or government entities (like CGHDB) that might list products on behalf of artisans.

4) Administrators: Platform staff to moderate listings, resolve disputes, and verify sellers.

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Understanding these personas guides UI/UX: e.g., a simple mobile-first design for artisans, bilingual support, clear help docs, and an intuitive bidding interface for buyers.

III. MARKET ANALYSIS AND COMPETITOR BENCHMARKING

Table 1. Indian handicraft marketplaces analysis.

Platform	Type	Artisan Sellers	Business Model	Fees/Commission	Notable Features
Amazon Karigar	Marketplace	~1.2 million (as of 2024)[8]	Inventory (Amazon-owned) marketplace	Referral fee ~8% (subsidized for crafts)[9]	High visibility (Amazon traffic), training support, "Karigar Mela" promotions[10]
IndiaHandmade	Govt. marketplace	~3.7K sellers [11]	Marketplace run by Ministry of Textiles	Zero commission/fees (no portal fee)[12]	Official platform (Digital India initiative), exclusive focus on crafts, vetted "authentic" products[12]
AuthIndia	C2C marketplace	>15,000 products listed[13]	Artisanal crafts	No registration or commission fees[14]; optional ad banners	Focus on traditional crafts, crafts stories; buyer registration optional, free listings
Craftsvilla	Marketplace	25,000+ artisans, 4M+ products[15]	Marketplace for crafts & ethnic wear	Free registration; *"low commissions"*[16] (often ~5-15%)	Large catalog, fashion-emphasis, frequent sales/offers; requires seller KYC (PAN, GST)
GoSwadeshi (GoCoop)	Nonprofit marketplace	Artisan cooperatives & weavers	Fair-trade handicrafts & handlooms	Commission-free; uses donations/grants[17]	Global shipping, international fair-trade focus, connects NGOs/coops directly
Etsy India	Global marketplace	Millions (globally)	Handmade/vintage marketplace	Listing fee ₹15, 5% transaction fee + 15% ad fee (per sale)[18]	Global reach, established brand; not India-specific but popular with some artisans
Craft House (India Craft House)	Curated marketplace	320 artisans direct[19]	Curated folk art marketplace	(details unspecified)	"Shop by State" feature, bulk/custom orders, global shipping handled
Kreate World	C2C marketplace	~6,000 creators,	Handmade products	Free signup; fast payouts	Women-empowerment focus (85% women

Platform	Type	Artisan Sellers	Business Model	Fees/Commission	Notable Features
		18,000 products[20]		(commissions unclear)	sellers), easy on-boarding
Auction Platforms	Auction sites	N/A	Handcrafted/fine art auctions	Buyer's premium (often ~10-20%); seller commission varies	Examples: *Saffronart*, *AstaGuru* (focus on fine art/antique auctions) or global *eBay*. Specialized for high-end art, not mass crafts.

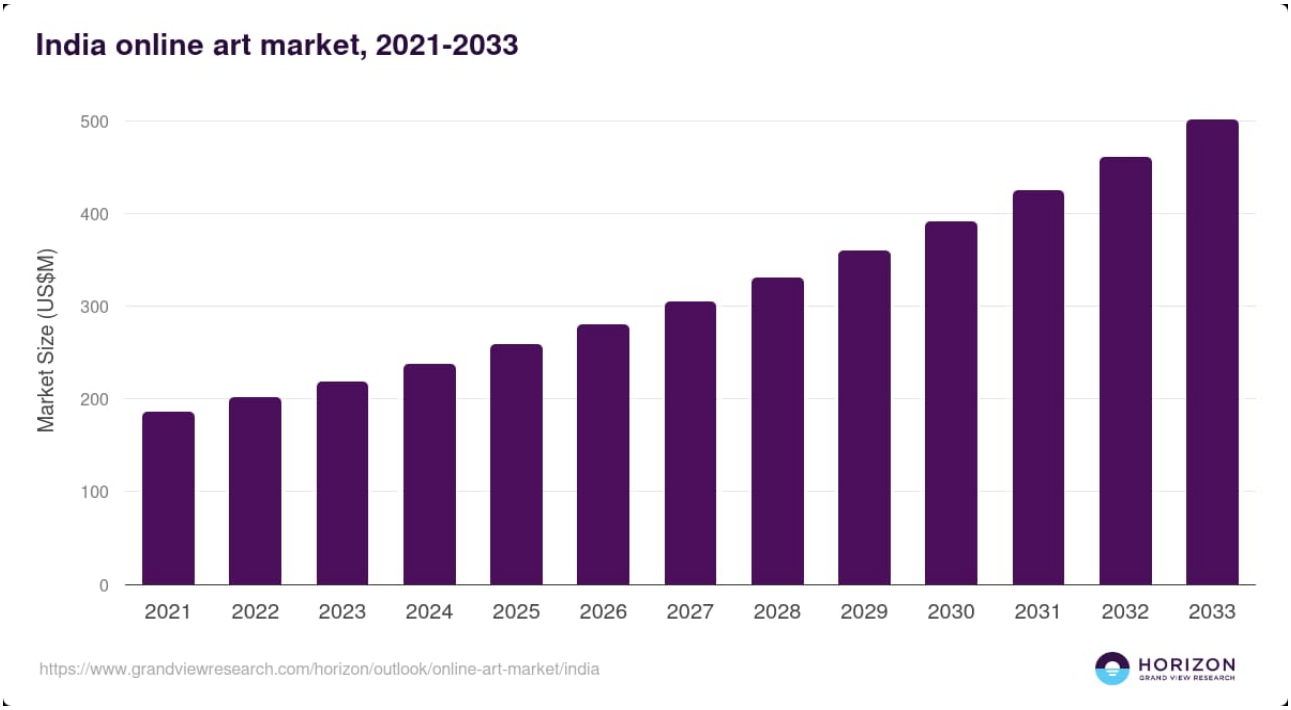

Fig 1. Indian art market analysis

IV. LEGAL REGULATORY AND COMPALIANCE REQUIRMENTS

1) Auction-specific Law: Under the Indian *Sale of Goods Act 1930*, an auction sale is legally complete when the auctioneer announces it (fall of the hammer)[21]. Auction rules (e.g. reserve price, seller bid rights) are governed by Section 64: e.g., sellers may bid only if expressly reserved[22]. The platform must handle auctions per these norms (smart contracts or admin functions to enforce closure rules and bids until hammer fall).
2) E-Commerce Regulations: As an online marketplace, the platform falls under the *Consumer Protection (E-Commerce) Rules 2020*. It must appoint a grievance officer and display their contact on-site[23], acknowledge customer complaints within 48 hours and resolve within 30 days[24]. It must disclose seller details (business name, address, customer care) to buyers on request[25], and provide transparent info on pricing, shipping, returns, and payment security[26]. Sellers must comply similarly (e.g. set up contracts with platform, be responsible for product accuracy and return/refund policies)[27][28]. The site should ensure privacy/data protection as per the *IT Act 2000* and mention in policies.

3) GST & Tax: Handicrafts have concessional GST rates (3–12% or exemption) depending on category[29]. The platform must collect GST correctly, provide e-invoices for registered sellers, and generate e-way bills for interstate shipments of goods (even if sellers are exempt)[30]. Sellers should be encouraged to obtain GSTIN if turnover exceeds ₹20 lakh (₹10 lakh for special states) to benefit from exemptions[31].
4) Payment Compliance: Payments require integration with RBI-regulated Payment Aggregators/PGs. If building an internal gateway, strict compliance with RBI's Payment Aggregator guidelines (Notification DPSS.CO. PD. No.174/02.14.008/2019-20) is required[32]. In practice, using licensed PGs (Razorpay, PayU, Stripe etc.) avoids direct compliance burden. The platform must not store raw card data (to remain PCI DSS compliant) and should use SSL/TLS for all payment transactions.
5) Other: Intellectual Property (check for GI tags on crafts; allow "product of India" claims only for GI-certified crafts). Provide digital signatures/invoices (e-invoicing if turnover >₹10Cr). If foreign buyers are allowed, comply with FEMA rules (collect Form 15CA/CB). Ensure Age 18+ users if bidding involves contracts.

V. MONETIZATION & PRICING MODELS

Common revenue models for craft marketplaces include:

1) Commission on Sales: A percentage fee on each sold item. Indian craft platforms vary: India Handmade and GoSwadeshi use 0% commission[12][17] (sponsored by government/grant funding), while Amazon Karigar charges ~8% 【30†L133-L136} and Craftsvilla "low commissions" (~5–15%)[16]. Our site could adopt a modest commission (e.g. 5–10%) to cover costs, or initially waive fees to attract artisans (noting funding needs).
2) Listing Fees: A flat fee per listed item or per auction. This provides revenue even if items don't sell. However, many artisan platforms avoid high upfront costs to encourage participation. A small fixed fee (e.g. ₹10/item) is an option.
3) Featured Listings / Advertising: Artisans could pay for promoted placement (homepage banners, highlighted listings). This increases revenue without burdening general sales.
4) Premium Membership: Monthly/annual subscription for power sellers (with perks like analytics, free listings). Possibly useful if targeting NGOs or businesses.
5) Transaction Fees / Payment Surcharge: Normally borne by seller or buyer (PG may charge ~1–2%). This is minor and must be disclosed.

The platform's pricing structure (which fees and their rates) will be decided to balance artisan support with financial viability. For example, a hybrid: no listing fee + 5% commission + optional paid promotions.

VI. TECHNICAL ARCHIECTURE & SYSTEM DESIGN

1) Frontend: A responsive React.js app (HTML/CSS/JS) provides all user views (item listings, auction page, bidding interface, seller dashboard, etc.). It communicates via REST API over HTTPS. It should use modern libraries (e.g. Material-UI or Bootstrap) for UI and ensure mobile optimization (touch-friendly buttons, collapsible menus).
2) Backend: Node.js with Express.js handles business logic. Endpoints include user auth, product/auction CRUD, bidding, payments, and admin functions. Use JSON Web Tokens (JWT) for stateless authentication. Secure password storage with bcrypt.
3) Database: MongoDB (NoSQL) to store collections like Users, Products, Auctions, Bids, Orders. Data models are shown below. MongoDB's horizontal scalability (sharding) is an option for future growth.
4) Authentication: JWT-based. Users register/login with email and password; artisan verification may involve uploading KYC docs. Access tokens (with expiration) for API calls. HTTPS to protect credentials.
5) APIs: Design RESTful routes (see table below). Use versioning (e.g. /api/v1/...). Rate-limit and log calls. For auctions, consider Web Sockets or polling endpoints for real-time bid updates (not detailed here, assume polling every few seconds to /current-bid).

Table 2. API Endpoints

Endpoint	Method	Description

Endpoint	Method	Description
POST /api/auth/register	POST	Register user (buyer/artisan). Returns JWT.
POST /api/auth/login	POST	Login, returns JWT and user profile.
GET /api/users/me	GET	Get current user profile (requires JWT).
POST /api/users/verify	POST	Submit seller KYC documents for verification.
GET /api/items	GET	List all items/auctions (with filters).
POST /api/items	POST	Create new product listing (artisan only).
GET /api/items/:id	GET	Get item details (includes current bid).
PUT /api/items/:id	PUT	Update item (artisan only, before auction).
DELETE /api/items/:id	DELETE	Delete item (artisan only, no bids placed).
POST /api/auctions/:id/start	POST	(Admin) Start auction for item.
POST /api/bids	POST	Place a bid on an auction.
GET /api/auctions/:id/bids	GET	List bids for an auction (or current top).
GET /api/auctions/:id/winner	GET	Get auction winner (after close).
POST /api/payments/checkout	POST	Create payment order for winning bid.
POST /api/payments/verify	POST	Verify payment gateway callback/webhook.
GET /api/orders	GET	List user's purchase orders.
GET /api/orders/:id	GET	Get order details (shipping status etc.).

A. Security Best Practices

1) Authentication & Access Control: Use strong JWT secrets, HTTPS everywhere. Enforce role-based access (e.g. only a verified seller can create/modify its items). Implement 2FA for admin logins if possible.

2) Data Protection: Store passwords with bcrypt. Encrypt sensitive fields (e.g. KYC documents) at rest. Regularly patch dependencies. Use HTTPS/TLS and HSTS for all requests.

3) Payment Security: Never handle raw card data on our servers; use PCI-compliant gateway tokens. Follow RBI and PCI DSS guidelines. For example, Razorpay provides PCI compliance on behalf of users. Display trust badges.

4) Logging & Monitoring: Log critical events (login failures, high bids, admin actions). Use IDS/IPS tools or services to detect anomalies.

5) Backup & Recovery: Regular database backups. Replication across zones. Plan for failover.

B. UX/UI & Accessibility

1) Auction Flows: Clear item listing pages showing product images, description, starting/reserve prices, current highest bid and time remaining. Prominent "Place Bid" button. Responsive, touch-friendly UI (target 44×44px tappable controls[33]). Real-time bid updates (e.g. via short polling or Web Sockets) prevent stale info. After bidding, show confirmation and new current price if bid won.

2) Bidding Process: Guide users with bid increments and maximum-bid (proxy bidding) features. Show error if bid < minimum. Disable "Bid" after auction ends.

3) Seller Onboarding: A step-by-step signup wizard for artisans: enter profile, upload ID/KYC documents, set up payment/payout account (bank details). Provide contextual help (tooltips) and support contact. Mobile-accessible form design.

4) Item Pages: High-quality images with alt text (WCAG 2.1). Tabs or sections for details, artisan bio, and shipping info. Ensure color contrast meets WCAG AA.

C. Operations: Seller Verification, Logistics & Support

1) Seller Verification (KYC): Require artisans to submit PAN and address proof (Aadhaar, voter ID). For coops/NGOs, require GSTIN. Automated checks (e.g. Aadhaar OTP) can verify identity. Manually review first sellers if needed. Verified sellers get a badge.

2) Listings Review: Optionally moderate listings (e.g. no prohibited items, verify authenticity claims).

3) Payments & Payouts: Use an integrated payment gateway. After auction ends, hold buyer's payment in escrow. Release funds to seller after delivery (e.g. 3-7 days after confirmed receipt to allow for return window). Charge platform commission at payout time.

4) Shipping & Logistics: Allow sellers to print shipping labels. Recommend/collaborate with courier partners (Delivery, FedEx). Provide customers tracking updates. If possible, negotiate volume rates or cash-on-delivery handling. For returns: likely *no returns* on auctioned items except on damage or fraud, per explicit policy; communicate this clearly to buyers.

VII. DEVELOPMENT TIMELINE, RESOURCES & COSTS

Table 3. SDLC[1] Table

Phase/Milestone	Activities	Duration	Deliverables
1. Planning & Design	Requirements gathering, wireframes, UI/UX design	4 weeks	Wireframes, UI mockups, specs
2. Backend Setup	Setup Node/Express, database models, auth	6 weeks	Auth system, User APIs, data schema
3. Frontend Development	Build React components (home, item pages, bidding, dashboards)	8 weeks	Functional UI flows (SPA)
4. Auction Engine	Implement auction logic (start/end, bid handling, timer, API)	4 weeks	Auction and bidding endpoints
5. Payments Integration	Integrate payment gateway (orders, webhooks), escrow logic	3 weeks	Working payment flow
6. Testing & QA	Unit/Integration tests, security audits, performance tuning	4 weeks	Test reports, optimized code

[1]Software Development Life Cycle

Phase/Milestone	Activities	Duration	Deliverables
7. Launch Preparation	Deploy staging/prod, CI/CD pipelines, finalize documentation	3 weeks	Live site, deployment pipelines
8. Launch & Beta	Beta release, collect feedback, bugfixes, final adjustments	4 weeks	Stable production release

Total estimated duration: ~26 weeks (~6–7 months) with a 5–6-person team (3 full-stack devs, 1 UI/UX designer, 1 QA, plus PM/DevOps).

VIII. CONCLUSION

The Chhattisgarh Arts and Crafts Live Auction Website represent a meaningful integration of traditional culture with modern technology. By leveraging a full-stack development approach using HTML, CSS, JavaScript, React.js, Node.js, Express.js, and MongoDB, the platform successfully creates an interactive and scalable environment for conducting real-time auctions of authentic handicrafts.

This system not only enhances the accessibility and visibility of Chhattisgarh's rich artistic heritage but also empowers local artisans by providing them with a direct and fair marketplace. The live auction feature ensures transparency and competitive pricing, while the user-friendly interface improves the overall buying and selling experience.

In conclusion, the project demonstrates how digital platforms can play a crucial role in preserving cultural heritage, boosting local economies, and connecting regional art forms with a global audience. With further enhancements such as secure payment integration, mobile applications, and advanced analytics, the platform has the potential to grow into a comprehensive and sustainable e-commerce ecosystem for traditional crafts.

IX. ACKNOWLEDGEMENT

We would like to express my deepest gratitude and thanks to my supervisor, Prof. Priyanka Devi Assistant Professor (Dept. of IT), who suggested the idea of the Craftbid and who gave me the needed information to start working on the project. Also, we would like to thank her for being supportive and for her guidance through this semester and for giving me the necessary advice to be able to realize this project. We are really grateful for her contribution. Moreover, we would like to thank her for his supervising methodology that made my tasks easier and motivated me through this period.

We would like to express our sincere gratitude to Dr. Awanish Upadhyay HOD (Dept. of IT), GEC Bilaspur for his assistance and useful comments. It is with great pleasure, we extend our gratitude and thanks to Dr. Sanjay Kumar Singhai (Principal of GEC Bilaspur) for his constant encouragement and motivation throughout the project. I am thankful to all the faculty members of IT Department, administration staff of GEC Bilaspur for their support.

Finally, Thanks to all who directly or indirectly have been supporting us and standing by us all the time.

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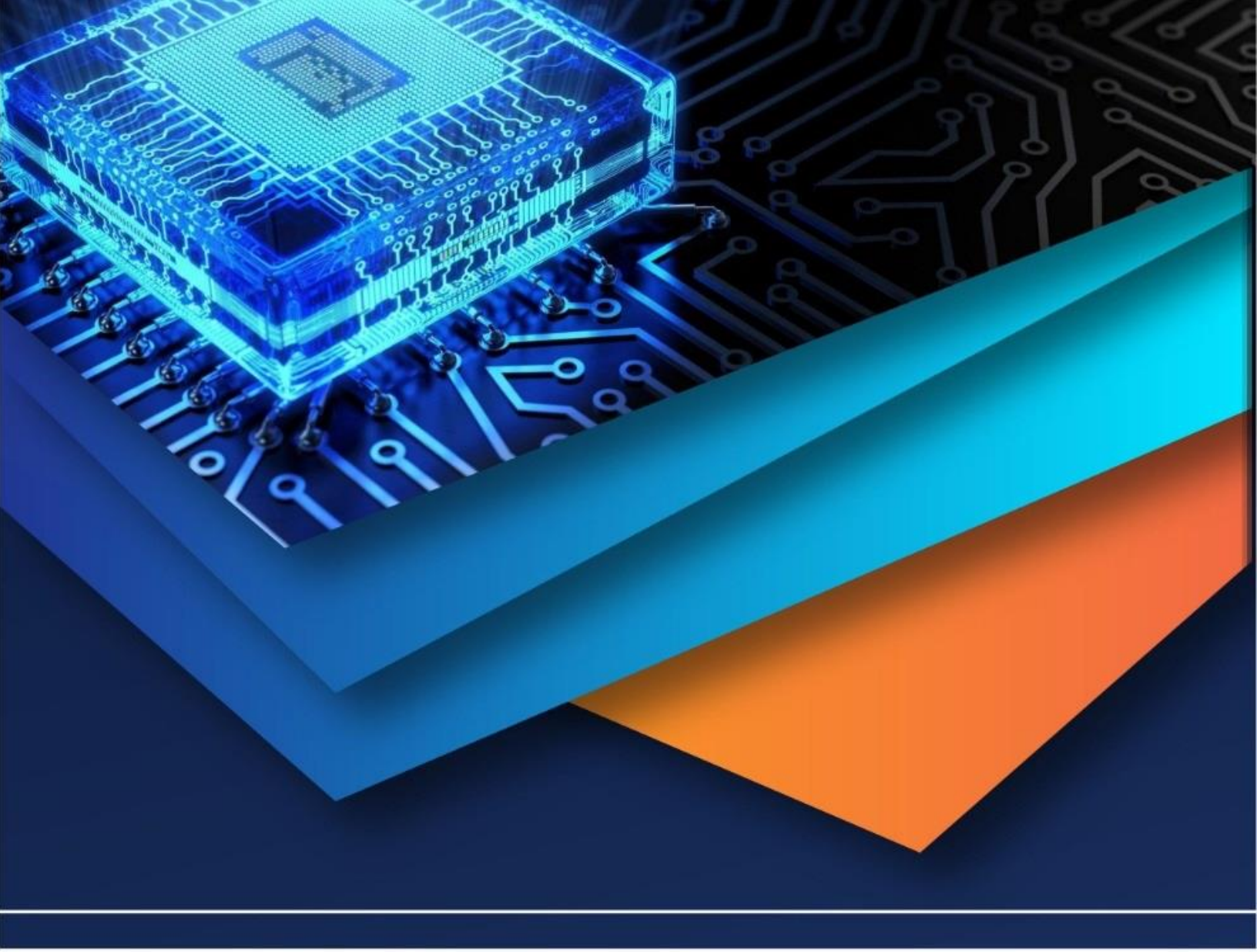

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