DroPilot : AI Assisted Dropshipping Automation

Final Year Project Proposal

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A project submitted in partial fulfillment of the
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of
BS in Computer Science / Software Engineering (CUI)

Department of Computer Science

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Project Registration

Project ID (for office use)	
Type of project	[✔] Traditional [ ] Industrial [ ] Continuing
Nature of project	[ ] **D**evelopment [✔] **R&D**
Area of specialization	Automation

Project Group Members

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Declaration: FYP group members have cleared all prerequisite courses For FYP-I as per their degree requirements.

For BS(Computer Science)

(CSC241 Object Oriented Programming, CSC291 Software Engineering Concepts, CSC371 Database Systems-I, HUM102 Report Writing Skills)

For BS(Software Engineering)

(CSC241 Object Oriented Programming, CSE291 Introduction to Software Engineering , CSC371 Database Systems-I , HUM102 Report Writing Skills)

Plagiarism Free Certificate

This is to certify that, I am Abdul Hanan S/D/ Muhammad Sharif , group leader of FYP under registration no CIIT/ FA21-BSE-040 /LHR at the Computer Science Department, COMSATS Institute of Information Technology, Lahore. I declare that my FYP proposal is checked by my supervisor and the similarity index is 2 % that is less than 20%, an acceptable limit by HEC. The report is attached herewith as Appendix A.

Date: _30-09-2024_ Name of Group Leader: _Abdul Hanan_ Signature: _____

Name of Supervisor: _Dr. Atif Saeed_ Co-Supervisor (if any):_____

Designation: _Assistant Professor_ Designation: _____

Signature: _____ Signature: _____

Project Abstract

DroPilot - AI Assisted Dropshipping Automation

DroPilot aims to revolutionize the dropshipping industry through the integration of artificial intelligence (AI) and automation technologies. It will help companies focus on growth while eliminating the burden of manual responsibilities by providing extensive tools designed to improve the entire dropshipping process.

DroPilot will extract information from reputable websites and gather valuable information about products, prices, and availability. These features are supported by automated decision making to manage the purchasing and shipping process, ensure on-time delivery, and reduce human error. Additionally, DroPilot's customer support chatbot is powered by AI and provides 24/7 support, helping users resolve customer queries quickly and efficiently.

1 Introduction :

DroPilot will use AI to simplify and automate the dropshipping process. In a business where speed, accuracy, and customer satisfaction are key aspects. DroPilot offers simple solutions designed to reduce manual work and automate the whole process and take care of all the heavy lifting so that users can focus on other important aspects of their business instead of manually handling the store. DroPilot will also provide useful insights to help the users make better decisions for their business.

1.1 Background & Objectives :

Dropshipping is a way of selling products online without holding any inventory. Instead of stocking up on goods, the seller lists products in their store. When a customer places an order, the seller purchases the item from a supplier, who then ships it directly to the customer. Essentially, the seller acts as a middleman, handling the sales but leaving the logistics to the supplier.We aim to automate this process of listing and updating products on the store and forwarding the orders. Essentially removing the manual workload so that the store owners can focus on other things like marketing , communication and building their brands while the store works itself.

1.2 Sub-Tasks & Techniques :

The project is divided into several sections, each designed to solve specific problems in the dropshipping process:

1.2.1 ***Web Scraping****: The process of extracting latest data and information about related products from suppliers websites. For example name , description , price , stock etc.*

1.2.2 ***Order Automation****: Automatically forwarding the orders from user's store to supplier so that they can fulfil it accordingly.*

1.2.3 ***AI Chatbot:*** *An AI powered chatboat that will intelligently handle user queries 24/7 to reduce human workload as much as possible.*

1.2.4 ***AI Copywriting:*** *Using AI to improve or generate product descriptions aimed at maximizing conversions.*

1.3 Evaluation Criteria :

To evaluate the success of DroPilot, several criteria will be used:

1.3.1 - ***Efficiency Improvement:*** *A decrease in manual work evaluated by the time saved when handling orders and managing inventory.*

1.3.2 - ***Customer Engagement:*** *Tracking customer feedback, we have noted improvements in both the time and quality of customer response.*

1.3.3 - ***Business Growth Metrics:*** *Automation and trend analysis have led to an uptick in sales, greater product selection, and better customer retention.*

1.3.4 - ***Technical Robustness:*** *The efficient operation of APIs, the precision of web scraping, and how effectively the platform can manage multiple vendors along with a multitude of products.*

2 Success Criterion :

The measure of the DroPilot project's success will rest on its ability to automate significant segments of the dropshipping process, improving efficiency, the satisfaction of customers, and the growth of the business. Success will depend on a defined set of core, certifiable milestones that correspond with the principal targets of the project. There exists a achievable and modest success criterion designed to guarantee that the outcome of the project fulfills requirements and has the potential to surpass them.

2.1 Core Success Criteria :

- **Functional Automation:** To be effective, the system needs to automate no less than 80% of the manual efforts involved in dropshipping, covering web scraping, order processing, and customer support. The verification will take place via performance

tests showing that these tasks are performed with little human contribution and with zero critical errors.

- **Customer Engagement:** The chatbot enabled by AI ought to resolve at least 90% of customer questions without human involvement. The standard will be met by recording the chatbot's answer accuracy and effectiveness from customer feedback and interaction tracking.
- **Accuracy of Data Scraping and Order Automation:** For web scraping, the goal is to extract correct product data with a success rate no less than 75%, and the order automation should produce on-time and accurate processing for at least 90% of transactions. These criteria will receive verification through trials using real data and simulations of order processing.
- **User Adoption and Feedback:** An indication of success for a project will come from favorable feedback from a sample group of dropshipping companies. According to our estimates, at least 70% of users must feel a rise in operational efficiency and more satisfaction after using DroPilot.
- **Scalability and Integration:** It is necessary for the platform to illustrate its capability to integrate smoothly with two or more different e-commerce platforms and display scalability to manage a variety of vendors and product groups. Success in this sector will be demonstrated by integration tests and load test metrics.

2.2 Evidence of Success :

The success of the project will be evidenced by:

- Extensive accounts on the performance and accuracy of task automation.
- Chatbot effectiveness reflected in customer interaction logs.
- User feedback concerning satisfaction surveys.
- Data which indicates enhancements in operational efficiency alongside sales growth.
- Technical reporting on scalability alongside API integration performance.

3 Related work :

3.1 Dropy.ai [1]:

Dropy.AI aims to simplify dropshipping by automating core tasks with AI. It helps users find products, keeps stores updated with new items, and offers an AI-driven customer support system. While the brand spy tool is useful for checking competitors’ strategies, it's not revolutionary and might not always provide a clear advantage.

3.2 AutoDS [2]:

AutoDS is known for being easy to use, especially for beginners, but it's fairly basic. It automates routine tasks like processing orders and adjusting prices when suppliers change

them. You can quickly import products from platforms like AliExpress, though it can feel limited if you're looking for more advanced customization or control.

3.3 Glitching AI [3]:

Glitching AI offers tools to discover trending products and manage orders, but its standout feature is access to a network of suppliers. However, the platform's analytics are decent but not as in-depth as some users might want, and while the automated marketing tools are convenient, they can feel generic without much personalization.

3.4 Sell The Trend [4]:

Sell The Trend gives access to over 7 million products and lets you fulfill orders with one click. Its NEXUS tool helps track competitors' trends, but some may find it overwhelming due to the sheer volume of data. The built-in marketing tools are functional but won't blow you away if you're expecting cutting-edge features.

4 Project Rationale :

E-commerce's fast growth is largely responsible for the rise of dropshipping, a business model that permits retailers to deal in products without keeping a stock. The operational difficulties related to the management of product listings, order processing, customer service, and market competition often become too much, especially for small and medium enterprises. DroPilot plans to take on these issues by providing an automated system that eases the process of dropshipping. Given today's digital climate, where automation and artificial intelligence are innovating business models in many industries, this project is extremely relevant.

The catalyst for DroPilot comes from the requirement to decrease the involvement of humans in ordinary and routine tasks, so that businesses can channel their energy into scaling and making strategic choices. We will obtain precious experience in the realm of developing AI powered solutions, while also integrating a variety of technologies, such as machine learning, natural language processing (NLP), and automation frameworks, and learning about the dynamics of the e-commerce market. Our goals for this research and development are to broaden our understanding of the tie between AI and business automation, a field that is expanding rapidly with great promise.

4.1 Aims and Objectives

The aim for DroPilot is to automate the dropshipping process to reduce the human workload as much as possible. From store creation to fulfilling orders and handling customer queries. We hope to automate it all with minimal human effort.

4.2 Scope of the Project

DroPilot covers the store creation, store deployment, product listing, product updates, order forwarding of dropshipping businesses. To achieve this, the tasks and deliverables are as follows:

4.2.1 Project Goals:

Create a completely functional dropshipping platform to automate hectic tasks like store management, product listings, updations and customer management.

4.2.2 Deliverables:

- A module designed for web scraping to collect information in real time about products.
- A chatbot supported by artificial intelligence for assisting customers.
- A backend automation system that is part of supplier platforms.
- Full documentation covering setup, use case, and the potential for future scalability.

4.2.3 Features and Functions:

- The process of extracting product data and managing orders is now automated.
- Real-time customer assurance through an AI chatbot.
- Features for analyzing trends and a comparison of products.
- Included in marketing support is AI generated copywriting.

4.2.4 Tasks:

- Apply web scraping algorithms for the purpose of data collection.
- Design and create both the backend system and the front-end system.
- Design an AI chatbot and combine it with NLP models.
- Hold user testing alongside feedback collection to advance the system development.

4.2.5 Deadlines:

- Web scraping module: Done in the first two months.
- Order automation and chatbot: Developed by month four.
- Full system deployment and testing: By the end of month eight.

5 Proposed Methodology and Architecture

The development will be based on rapid and iterative processes to ensure ease of use, continuous feedback and further development. The approach includes design, development and deployment phases, as well as regular testing and feedback to ensure the system meets performance targets.

5.1 Step-by-Step Procedures

5.1.1 Requirements Gathering and Analysis:

- Identify and document functional and non-functional requirements with potential users and other stakeholders.
- The paper also outlines the various features which include web scraping, order automation, AI chatbot.

5.1.2 System Design:

- Design the platform in a way that the architecture is not rigid and can easily accommodate further expansion.
- Design flowcharts and block diagrams illustrating data flow between different system components.

5.1.3 Web Scraping Development:

Set rules for fetching information about products from dropshipping websites, with the focus on reliability and frequent updates.

5.1.4 Backend Development:

The backend should be created for User Authentication, User Management, Store Management,Product Management and Order Management.

5.1.5 AI Chatbot Development:

- Implement the customer support chatbot by using natural language processing models.
- Teach the chatbot to respond to common queries, order status checks and other information related to customer support.

5.1.6 Order Automation Implementation:

- Design and implement an order processing system that will communicate with supplier systems to enable proper order, inventory, and shipment management.
- Implement event-driven architecture to perform real time actions when an order is placed.

5.1.7 User Interface and Front-End Development:

- Develop the frontend part of the application to provide the users with easy access to the product information, order management.
- To ensure that the design is compatible with different devices, incorporate features of responsive design.

5.1.8 Testing and Iteration:

- Implement four types of tests: unit tests, integration tests, system tests, and other types of tests to check the functionality, performance, and scalability.
- Collect user feedback and build on features to improve the overall user experience of the platform.

5.1.9 Deployment:

- Host the platform on the cloud services so that it can be easily scalable and highly available.
- Use Continuous Integration/Continuous Deployment (CI/CD) to avoid interrupting users and allow for frequent updates and enhancements.

5.2 Flowchart of Proposed System

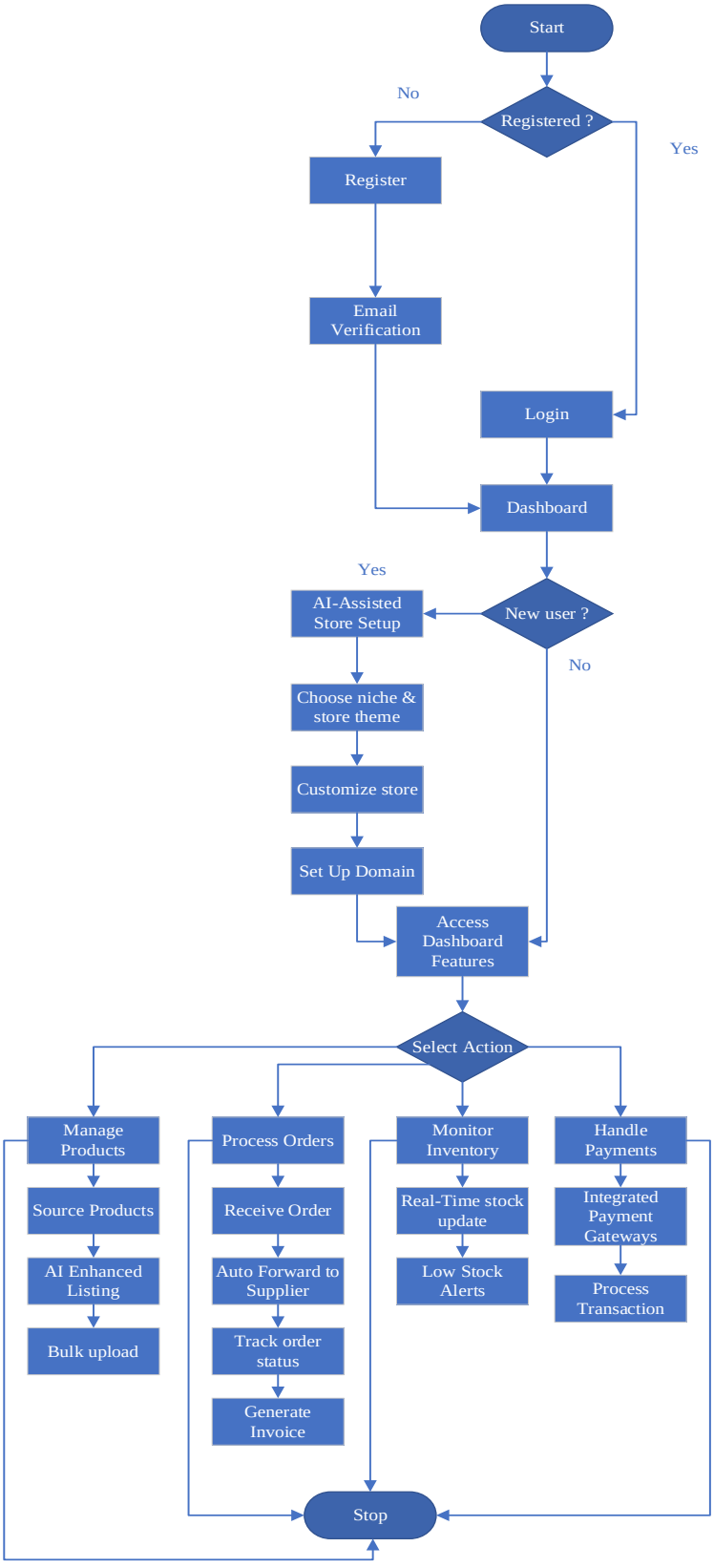


Figure1. FlowChart

5.3 System Architecture

5.3.1 Data Collection Layer:

This layer will consist of the web scraping engine responsible for gathering real-time product data from dropshipping websites.

5.3.2 Business Logic Layer:

The core functionality resides here, where the order processing system, AI chatbot operate.

5.3.3 API and Integration Layer:

This layer will handle communication with external e-commerce platforms, supplier APIs, and third-party services.

5.3.4 User Interface Layer:

The front-end interface will allow users to interact with the platform, view real-time product data, manage orders, and analyze business performance.

5.4 Block Diagram of System Components

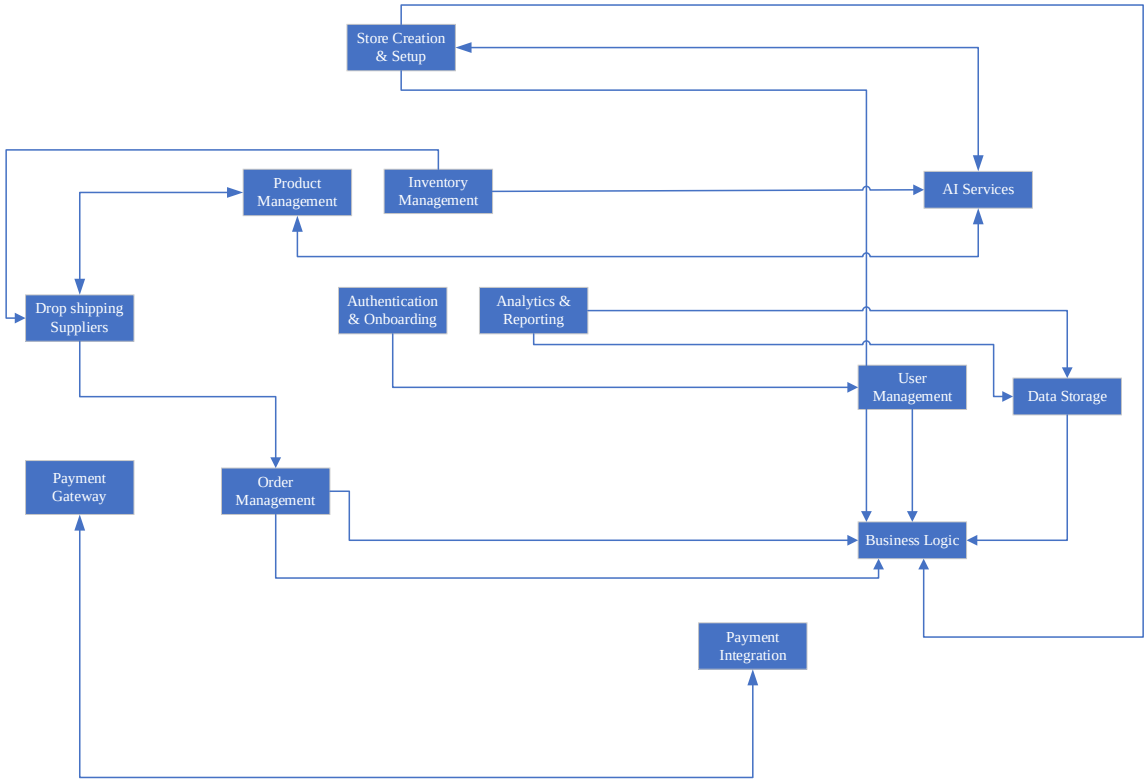


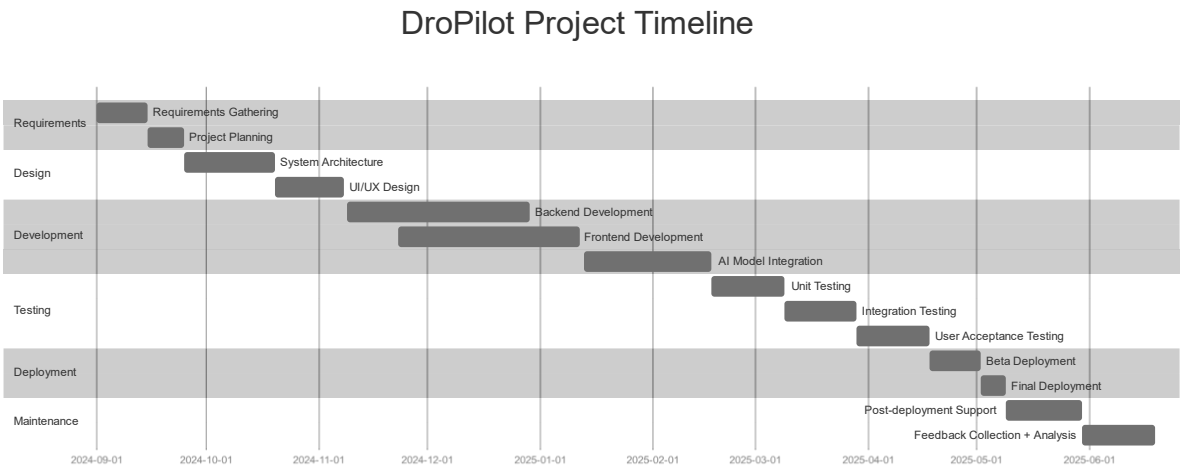
Figure2. BlockDaigram

6 Individual Tasks :

Team Member	Activity	Tentative Date
Abdul Hanan	• Project Planning • UI/UX Design • Front-end Development • Backend Development	25-may-2025
Yahya Irfan	• Project Planning • Web Scraping • Backend Development • Testing	20-may-2025
Bushra Hasan	• Project Planning • Requirement Engineering • Front-end Development • Deployement	30-may-2025

Table: Individual Tasks

7 Gantt Chart :



8 Tools and Technologies

8.1 Tools:

- React Js
- Mongodb
- Express Js
- Node Js
- Python
- Visual Studio Code
- Google Colab
- Vercel / Netlify / AWS
- Git and GitHub

8.2 Technologies:

- Web Application
- Artificial Intelligence
- Web Scraping
- Automation
- Natural Language Processing
- OAuth
- Web Hooks
- Application Programming Interface
- Version Control

9 References

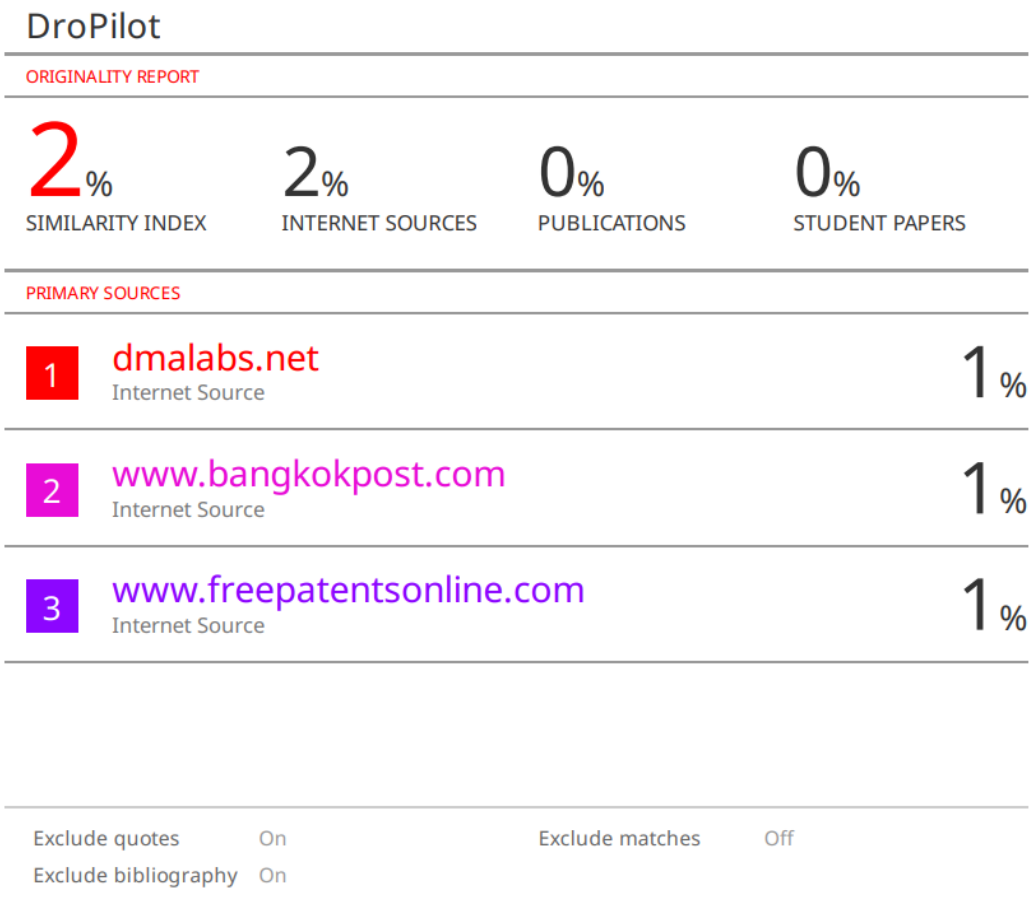
[1] "Dropy.ai™ - the future of ai dropshipping," Dropy AI, [Online]. Available: https://www.dropy.ai/. [Accessed 15 September 2024].

[2] "AutoDS the automated dropshipping tool for your store," AutoDS, [Online]. Available: https://www.autods.com/. [Accessed 18 September 2024].

[3] "Glitching AI - the Ultimate AI dropshipping tool," Glitching AI, [Online]. Available: https://www.glitching.ai/. [Accessed 20 September 2024].

[4] "Sell The Trend: AI Dropshipping," Sell The Trend, [Online]. Available: https://www.sellthetrend.com/. [Accessed 22 September 2024].

Appendix A



DroPilot

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