

ARC - Artificial Recognition of Cannabis

Greg Sveinbjornson
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Group Members

Greg Sveinbjornson

- ✓ Back End Engineer
- ✓ Front End Engineer
- ✓ Data Collection

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- ✓ Machine Learning Engineer
- ✓ Front End Engineer
- ✓ Documentation



Problem Statement

When you walk into a cannabis store, you will often see a menu like this.

This is because in Canada, you are not allowed to buy cannabis off the shelves, you must ask an employee to go to the back and get it for you.

Because of this, these menu boards are the only way for a customer to see what is in stock

Flower

Sativa	THC	CBD	1g	3.5 g	7 g
Headbanger Delta 9	22%	<1%	-	\$32 ⁹⁹	\$65 ⁹⁹
Chocolate Fondue DNA Genetics	21%	<1%	-	\$37 ⁹⁹	-
Ultra Sour Namaste	18%	<1%	\$11 ⁹⁹	\$39 ⁹⁹	-
Lemon Z OGEN	19.8%	<1%	-	\$38 ⁹⁹	-
OS Sativa Original Stash	20.3%	<1%	-	-	\$57 ⁹⁹
Gather (Jack Herer) Soleil <small>(LOW STOCK)</small>	17%	<1%	-	\$33 ⁹⁹	\$61 ⁹⁹
Blue Dream Spinach	22.2%	<1%	-	\$35 ⁹⁹	-
Donegal TWD	21%	<1%	-	\$34 ⁹⁹	-
Hybrid	THC	CBD	3.5 g	7 g	
Electric Punch Delta 9	16.6%	<1%	\$24 ⁹⁹	-	
Grapefruit GG1 Emerald Health	17.9%	<1%	\$32 ⁹⁹	-	
Dealers Pick Good Supply	19%	<1%	\$32 ⁹⁹	-	
Diesel Spinach <small>(SALE)</small>	20%	<1%	\$33 ⁹⁹	\$66 ⁹⁹	
White Widow Spinach <small>(SALE)</small>	19.2%	<1%	\$33 ⁹⁹	\$66 ⁹⁹	
Unicorn Poop Tantalus	20.7%	<1%	\$44 ⁹⁹	-	

Problem Statement

The highlighted values are THC and CBD percentages.

TCH and CBD determine the potency of the product, similar to alcohol percentage in alcoholic beverages or caffeine in coffee or energy drinks.

Because cannabis is a living product, these percentages can vary widely batch to batch, resulting in identical products having differences of up to 10%.

Flower

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FARMER
JANE
CANNABIS CO.

Problem Statement

As a result of the constantly changing values, the posted THC and CBD percentages in stores are often incorrect.

Our system aims to fix this problem by having store employees upload pictures instead of manually changing the boards.

Our system takes the time to change all the menu boards in a store from roughly 30 minutes down to 5.

Flower

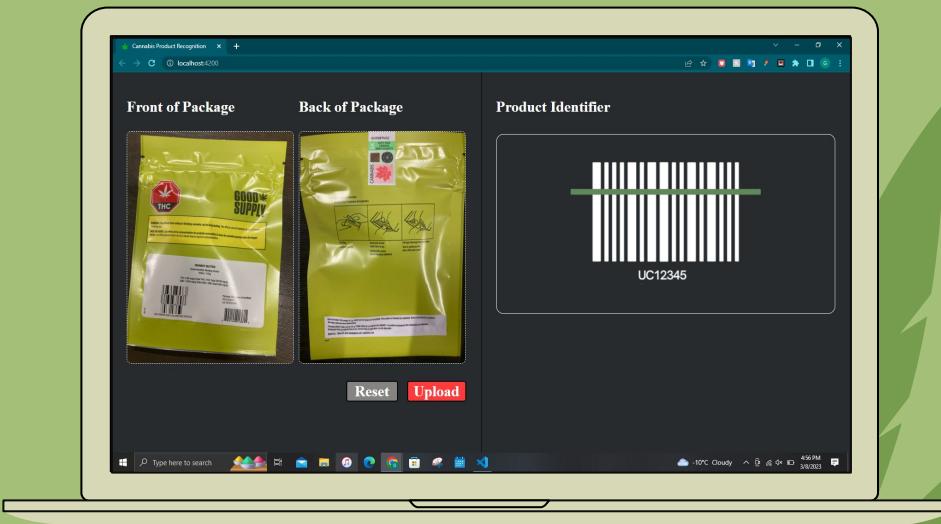
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CANNABIS CO.

Our Solution

We built an AI powered tool to get product information from cannabis packaging.

Given an image of cannabis packaging, our system will return the product name and brand, as well as the correct THC and CBD values.



Our Partners

For this project we worked with BudSense, a Regina startup that makes menu boards and inventory systems for cannabis shops.

We also worked with Farmer Jane Cannabis to collect our data and get user feedback



Implementation

We designed our system to be built into the existing dashboard for store employees that run the menus.

Our system can be easily added into the existing menu board systems for every cannabis store that uses BudSense menus.



Our Project to be Added to the Dashboard Here

bud sense.

Print Menus

Aurora

Create menus to be printed on paper in your stores.

Product Menus Bulk Prints

Product Menus

Show Inactive Menus (8)

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BULK FLOWER

	THC	CBD	S	THC	CBD	S
Busted Haze Milled Flower Sheet	30g	20.7%	-1%	\$122.99		
Sour Hash Good Supply	20g	22%	-1%	\$89.99		
Amsterdam Sativa High Dutch Organic	20g	21%	-1%	\$151.99		
Canna Berries Spanish	20g	24.6%	-1%	\$108.99		
Gilded Grams RFT	20g	20.8%	-1%	\$99.99		
Ultra Sour Potentia	20g	23%	-1%	\$104.99		
Grand Daddy Purple Good Supply	20g	23.2%	-1%	\$111.99		
Darby's Pick Indica Good Supply	15g	18.6%	-1%	\$ Active		

AUDIT - BULK FLOWER

Sections Bulk Flower

FARMER JANE CANNABIS CO.

AUDIT - FLOWER

Sections Sativa Hybrid Indica

FARMER JANE CANNABIS CO.

VAPES

brand	the	cbd	size	price
Ovaline (Live Rosin)	Avana	69.1%	<1%	0.5g \$31.99
Forbidden Fruit	Back Forty	80%	<1%	0.45g \$25.99
Kush Mist	Back Forty	80%	<1%	0.45g \$25.99
Super Lemon Haze Low Stock	Back Forty	80%	<1%	0.45g \$25.99
Grape Explosions	BOLD	84.8%	<1%	1g \$39.99
Hawaiian Sativa Live Resin Low Stock	BudHot	80%	<1%	1g \$43.99
Cherry OG	Divvy	85%	<1%	1g \$32.99
Pineapple Nudes	Divvy	85%	<1%	1g \$32.99
Pink Lemonade Low Stock	Divvy	85%	4%	1g \$32.99
Apples N' Bananas Live Resin Low Stock	Dunn Cannabis	75%	<1%	1g \$ Active
EJ Hybrid Wedding Cake (Live Trig)	Farmer Jane	89.5%	<1%	1g \$ Active

AUDIT - VAPES

Sections VAPES

FARMER JANE CANNABIS CO.

BEVERAGES

FARMER JANE CANNABIS CO.

INGESTIBLE OILS

FARMER JANE CANNABIS CO.

Profile

Aurora

Sign Out

Create Print Menu

Filter by Tags

Choose a Tag

Digital

Print

Web

Displays

Settings

Data Collection

There were no pre-existing datasets for our application

To get images to train our model, we went into the Rochdale and Normanview Farmer Jane Cannabis stores to take pictures



Data Collection

After 8 hours over 2 weekends, we collected over 7000 images from the two locations.

Our dataset includes 81 of the most commonly sold products in Canada



Data Collection

In collecting our images, we made sure to take the images with different backgrounds and lighting.

This was done to add variety to the dataset, which helps our AI adapt better to new images.



Data Augmentation

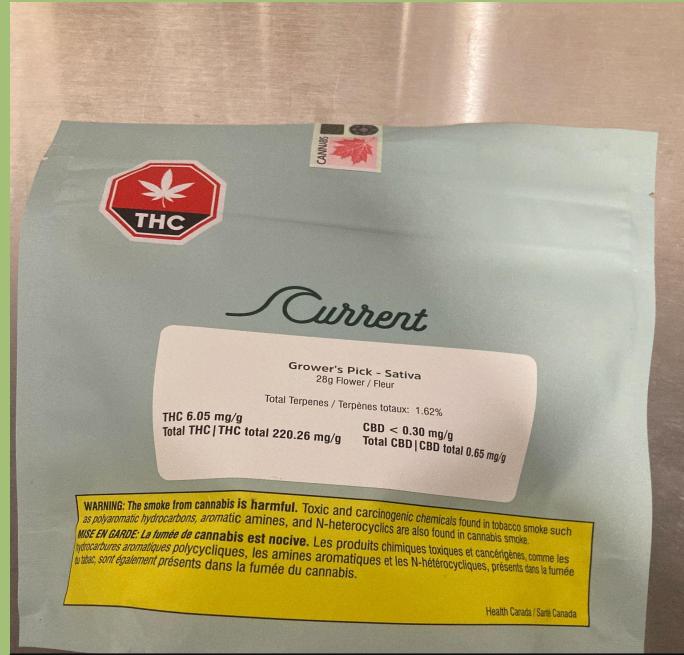
We added data augmentation to our images increase the dataset size. Our images were randomly given zoom, rotate, and brightness values.

In doing this, our dataset was artificially increased from 7000 to 35000 images.



The AI Model

Because of all the work done in data collection, we were able to get an AI that is 95% accurate.



Brand: Current
Product: Growers Pick
Certainty: 97.24%

Technologies Used

Front End



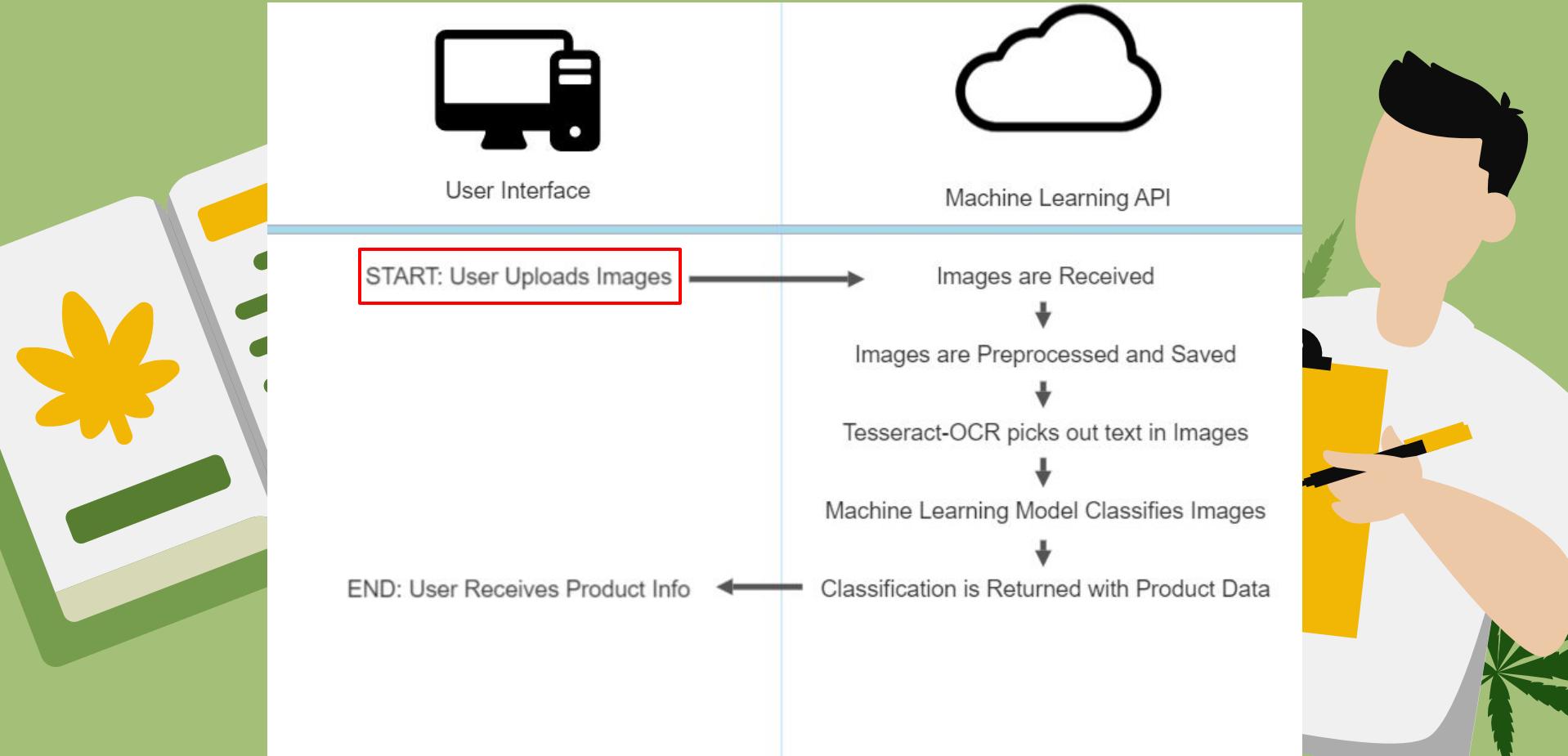
Back End



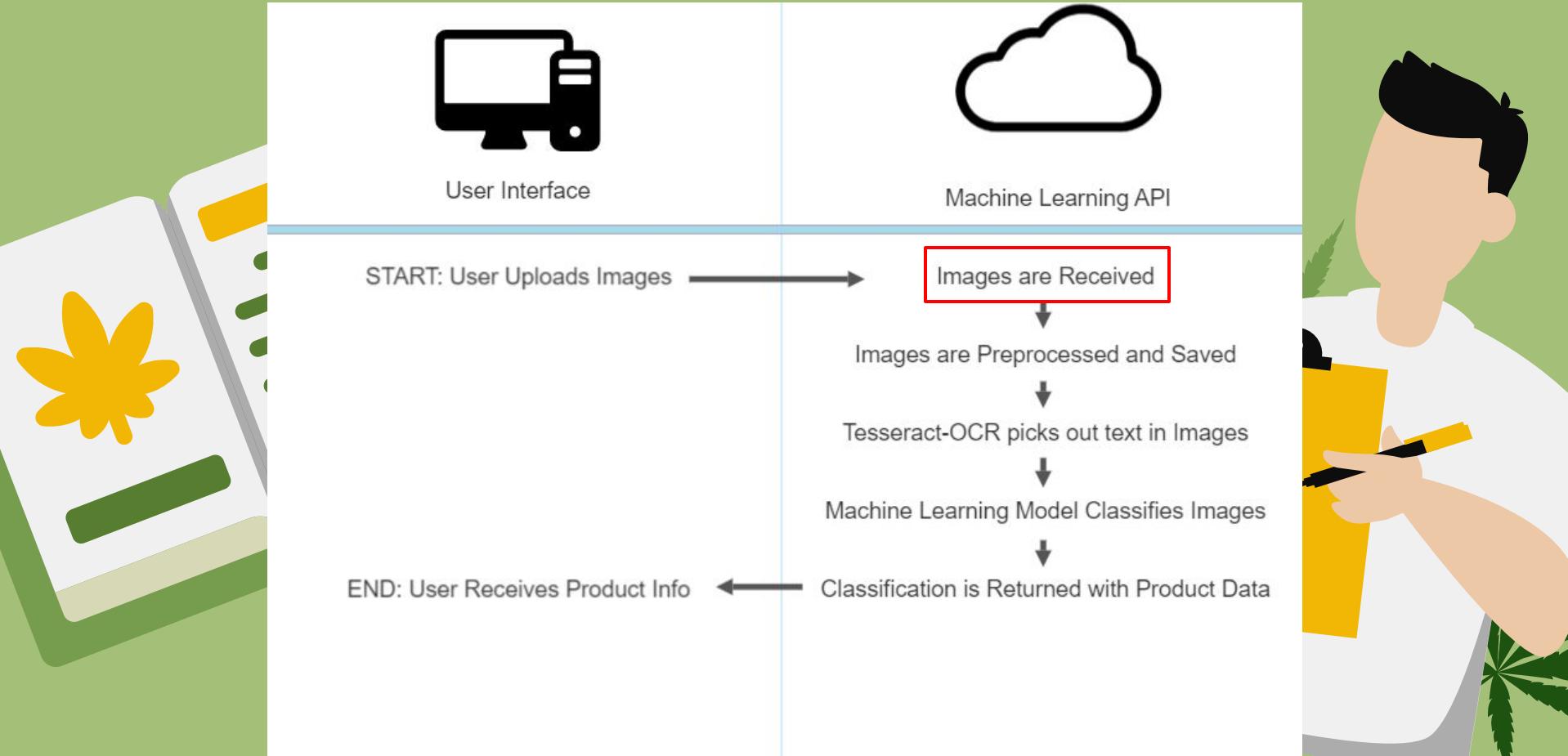
Machine Learning



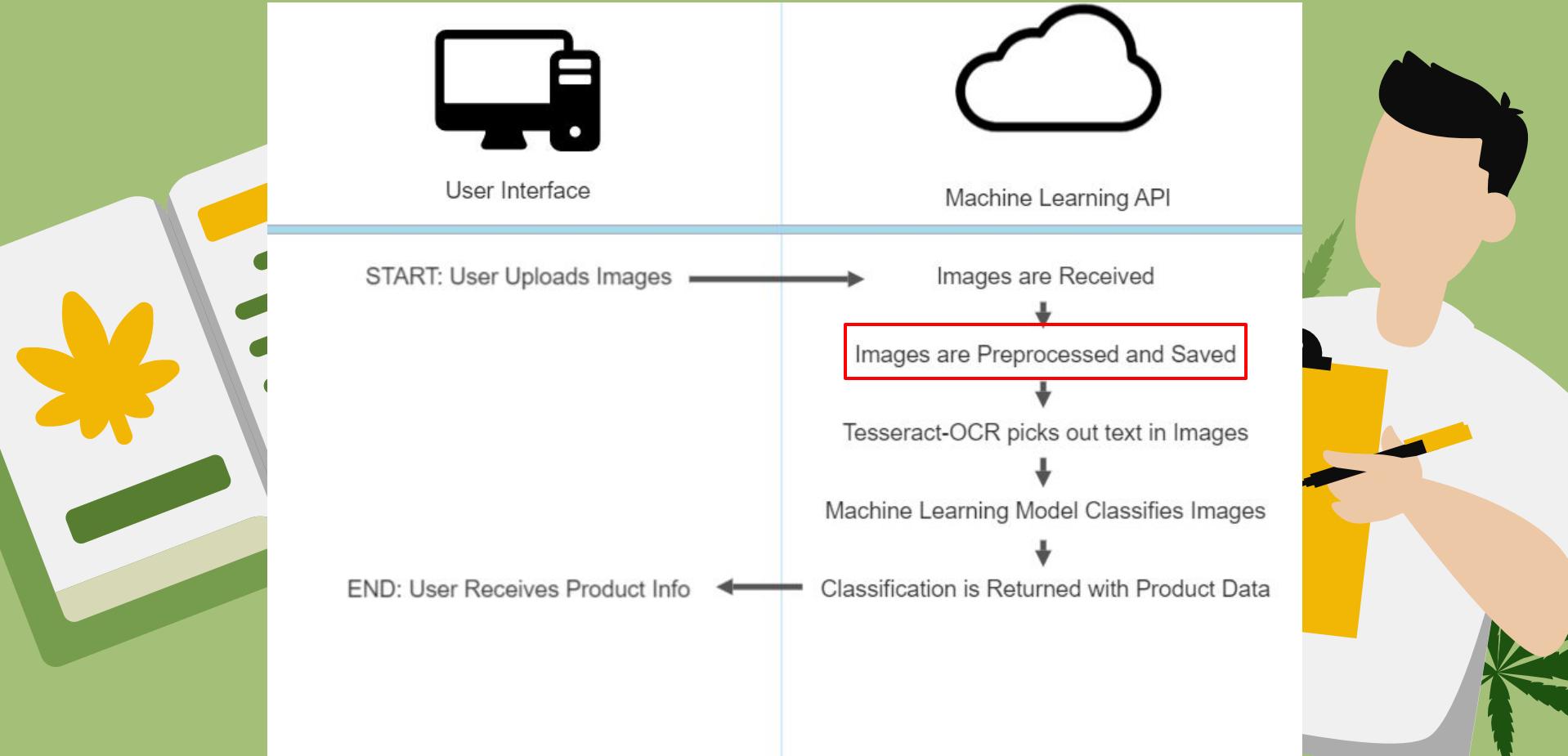
How It Works



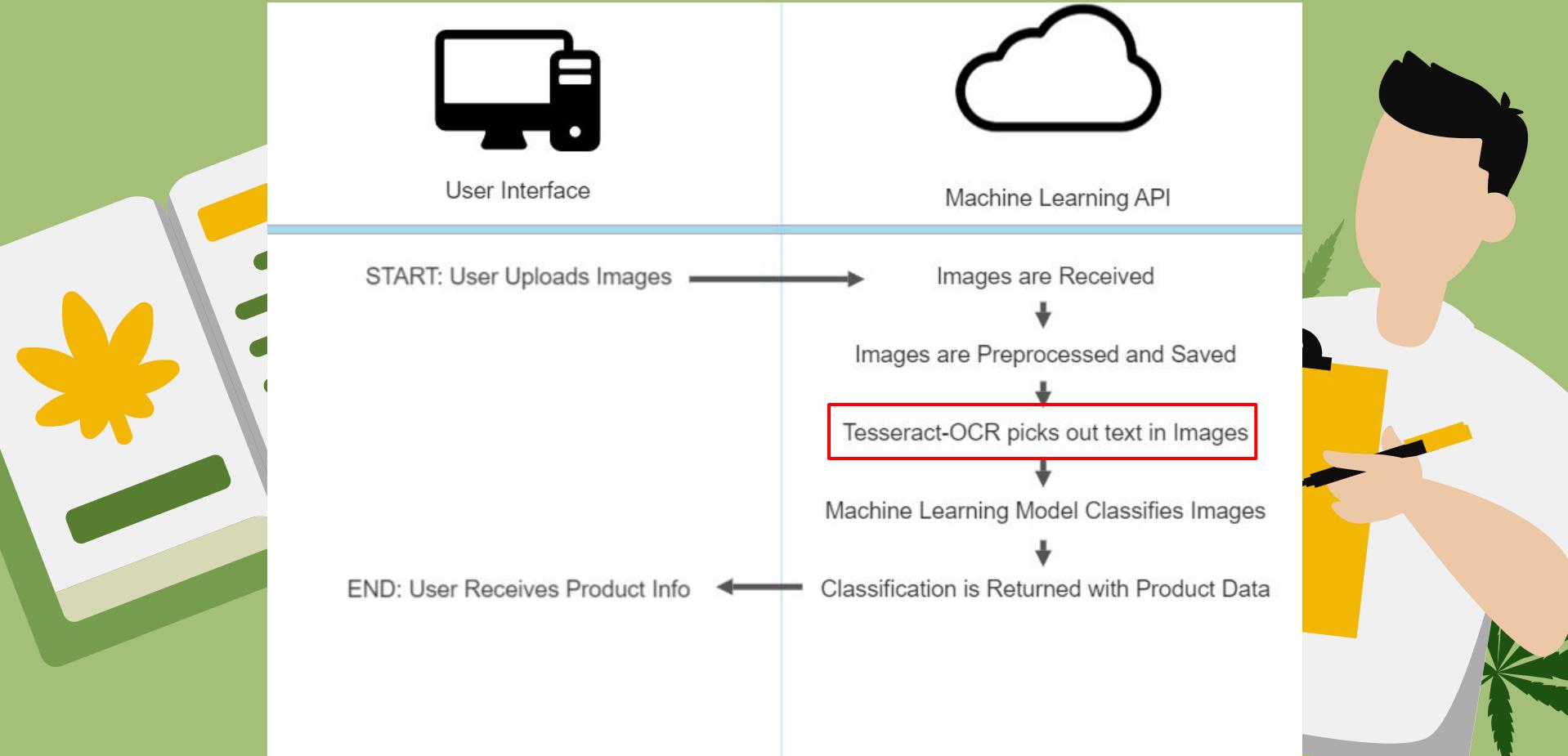
How It Works



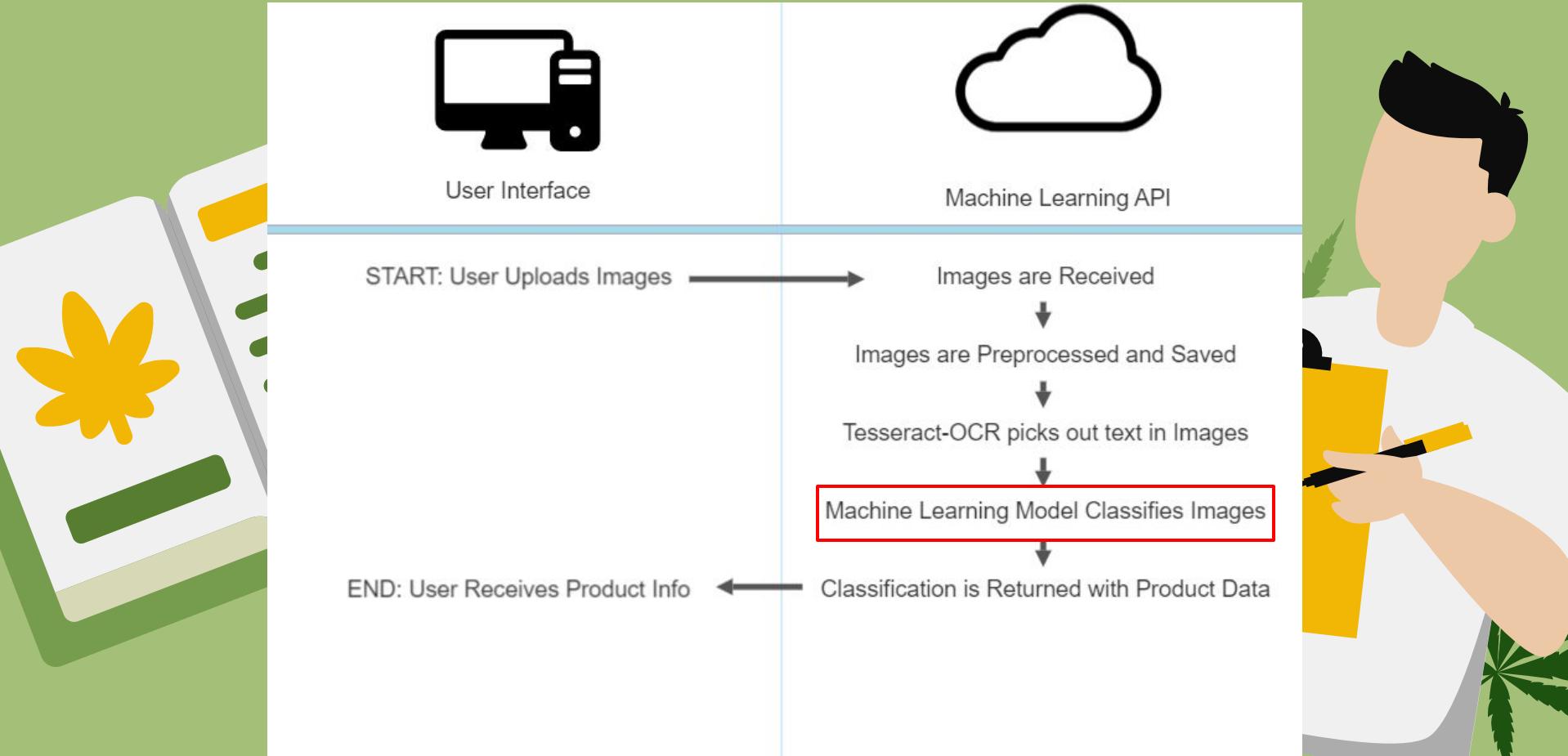
How It Works



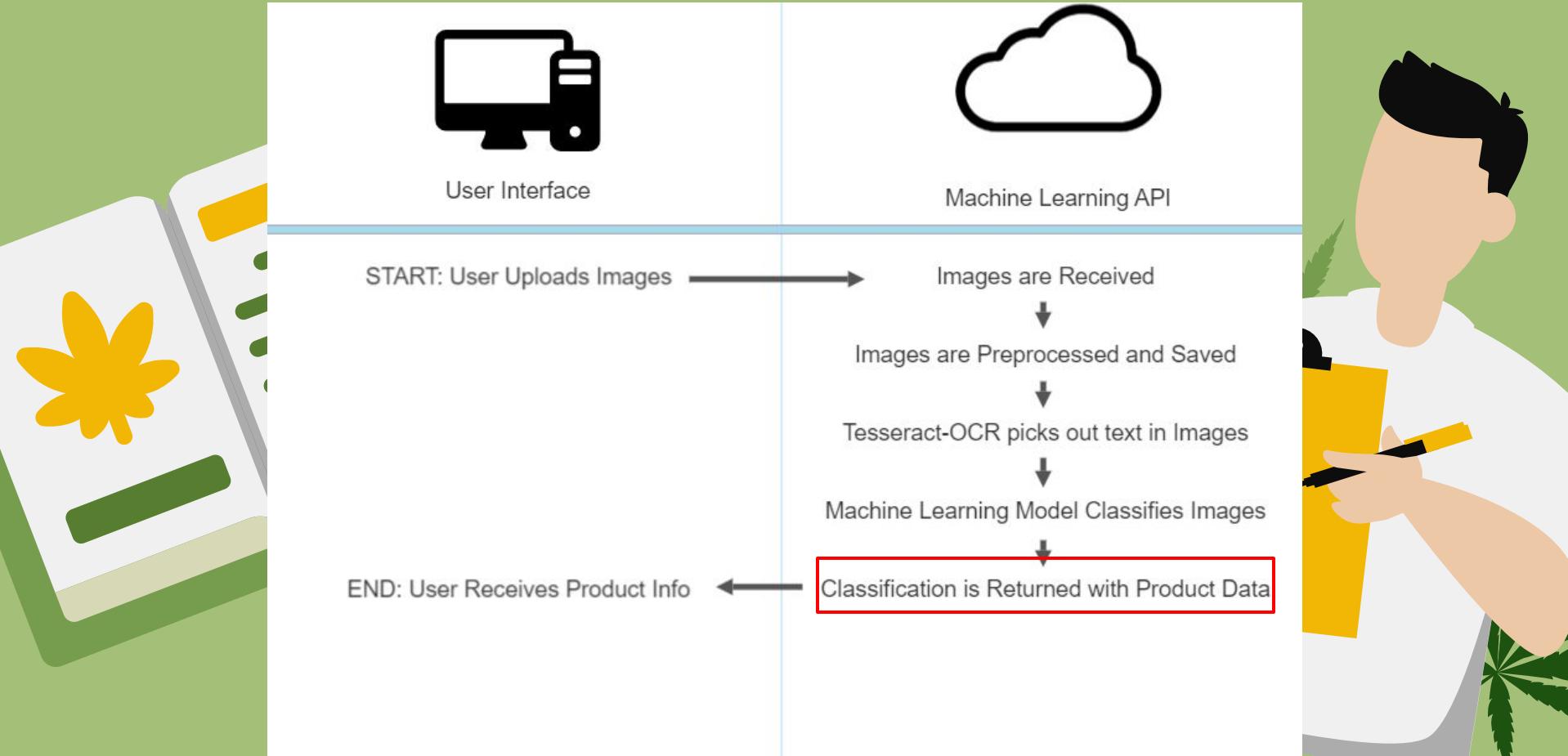
How It Works



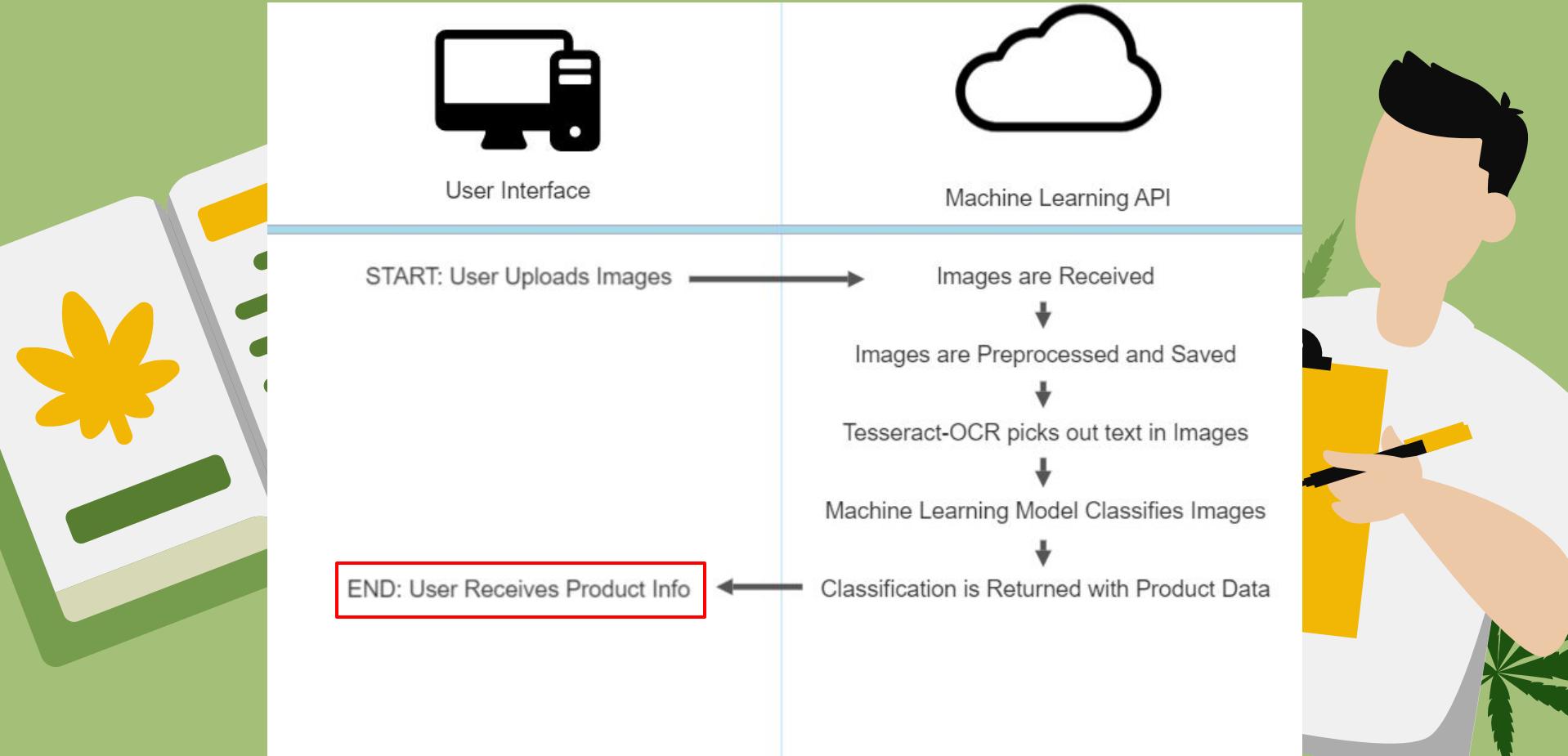
How It Works



How It Works



How It Works

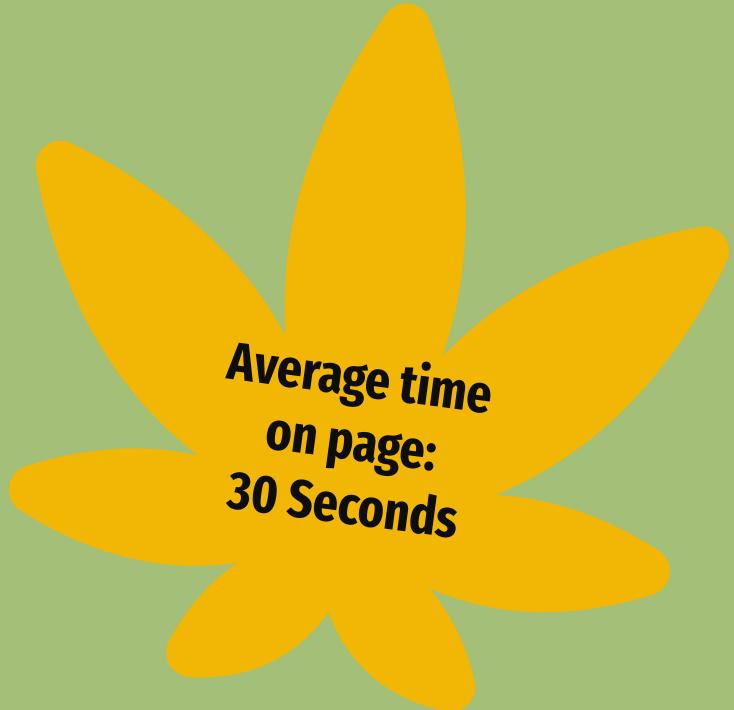


Design Philosophy - KISS

KISS - Keep it Simple, Stupid!

We wanted our design to be as simple and clean as possible, as our goal was to save time for store employees

The easier our page is to navigate, the faster an employee can get back to their usual tasks.





Project Demo



Future Work

Together with BudSense, we have set a timeline of 8-12 months to get this project fully rolled out on their dashboard.

We intend to add a mobile component, the ability to upload multiple products at once, and add more products to our AI model.



Acknowledgments

We would like to give a big thank you to:

Andrew Cretin - BudSense

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Paul Hewitt - BudSense

Jeff Usherwood - Farmer Jane

Mark - Farmer Jane

Tim Maciag - Mentor

Trevor Douglas - Mentor



Thanks For Listening

Question Time

