



ARC OF 

How to build an email
filter and classifier
that runs locally using
Java and Ollama

Freddy Guime



March 31- April 3, Austin TX 2025

The Problem



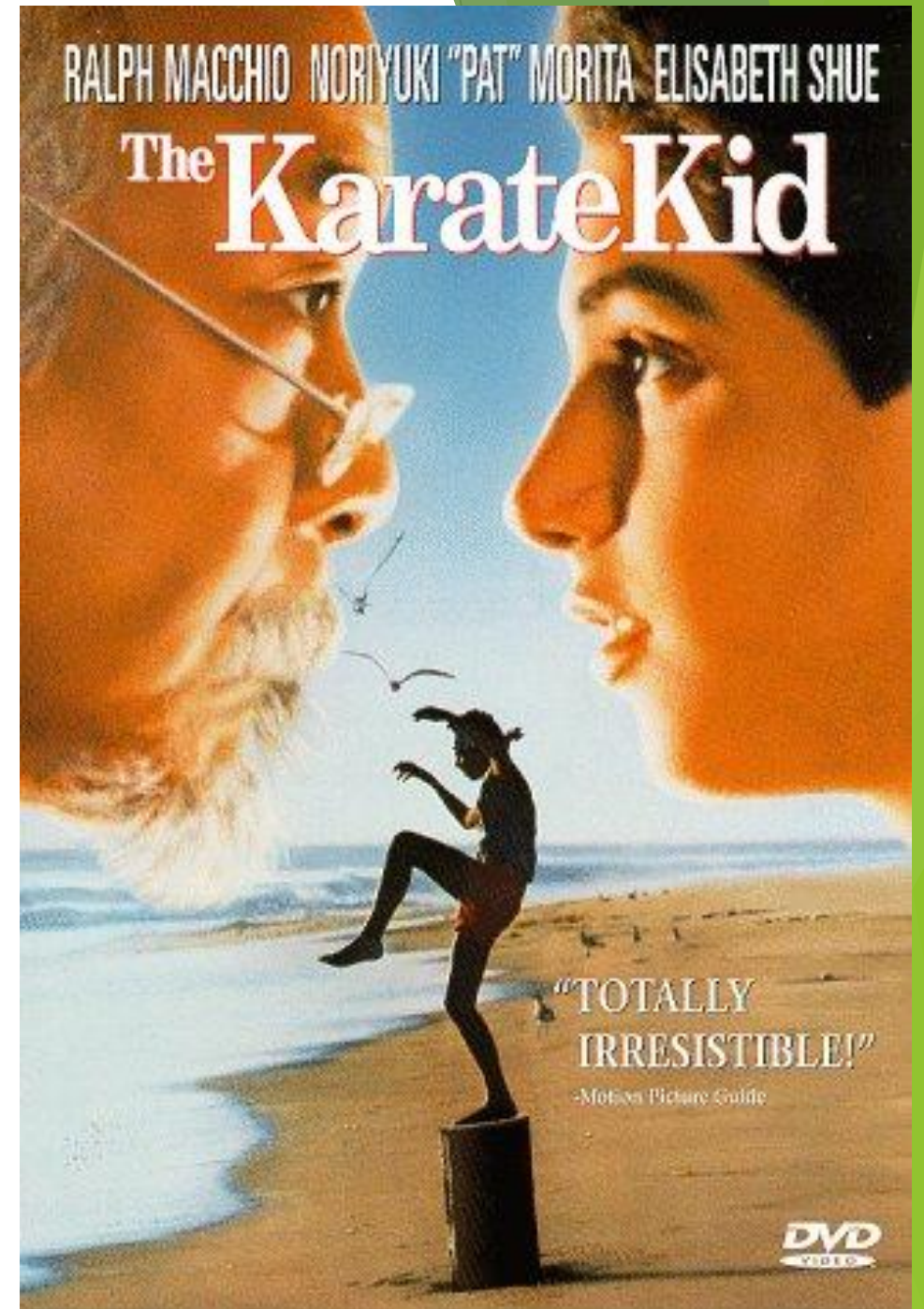
The Problem



The problem

- ▶ Personal Inbox
 - ▶ > 100,000 Emails
 - ▶ 10 years of sign-ups
 - ▶ Mixed with real emails
 - ▶ Like store receipts, emails from friends, etc

The Hero's Journey



Tried all the Tricks

► Trick #1 (Sort by Sender)

Amazon marketplace	Freddy Guime, will you rate your transaction at Amazon.com?	Tue 5/26/2020 3:39 AM	20 KB
Amazon Marketplace	Freddy Guime, will you rate your transaction at Amazon.com?	Sun 5/24/2020 12:18 PM	20 KB
Amazon Marketplace	Freddy Guime, will you rate your transaction at Amazon.com?	Sat 5/23/2020 7:42 AM	20 KB
Amazon Marketplace	Freddy Guime, will you rate your transaction at Amazon.com?	Fri 5/15/2020 11:21 AM	20 KB
Amazon Marketplace	Freddy Guime, will you rate your transaction at Amazon.com?	Thu 5/14/2020 5:44 AM	20 KB
▼ Amazon Music: 40 item(s), 38 unread			
Amazon Music	Amazon Music Unlimited: Your weekly recommendations	Sun 12/8/2024 9:28 AM	152 KB
Amazon Music	Amazon Music Unlimited: Your weekly recommendations	Sun 12/1/2024 9:08 AM	143 KB
Amazon Music	Amazon Music Unlimited Stay up to date	Sat 12/26/2020 10:54 AM	86 KB
Amazon Music	Amazon Music Unlimited Stay Up to Date	Fri 12/18/2020 7:39 PM	88 KB
Amazon Music	Amazon Music Unlimited Taylor Swift, Kid Cudi, Mary J. Blige, Pablo Alborán & more.	Fri 12/11/2020 5:39 PM	88 KB
Amazon Music	Amazon Music Unlimited Shawn Mendes, Lil Baby, Carrie Underwood, and Best Songs of 2020	Fri 12/4/2020 3:04 PM	83 KB
Amazon Music	You have unused invites on your Family plan	Tue 12/1/2020 9:04 AM	26 KB
Amazon Music	Amazon Music Unlimited Miley Cyrus, Bad Bunny, Taylor Swift, José Feliciano & more	Fri 11/27/2020 3:33 PM	90 KB
Amazon Music	Jolie G. accepted your invitation to join Amazon Music Unlimited for Family	Sat 11/21/2020 10:42 AM	12 KB
Amazon Music	Amazon Music Unlimited Garth Brooks, Megan Thee Stallion, BTS, Dolly Parton & more	Fri 11/20/2020 7:24 PM	86 KB
Amazon Music	Amazon Music Unlimited Amazon Original holiday music, Chris Stapleton, Future & Lil Uzi Vert, Billie Eilish & more	Fri 11/13/2020 6:28 PM	89 KB

Tried all the Tricks

► Trick #1 (Sort by

Amazon marketplace	Frederick	Rate your transaction at Amazon.com	Tue 5/26/2020 3:39 AM	20 KB
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▼ Amazon Music: 40 item(s), 38 unread				
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Amazon Music	Amazon Music		Sat 12/26/2020 10:54 AM	86 KB
Amazon Music	Amazon Music		Fri 12/18/2020 7:39 PM	88 KB
Amazon Music	Amazon Music Unlimited		Fri 12/11/2020 5:39 PM	88 KB
Amazon Music	Amazon Music Unlimited		Fri 12/4/2020 3:04 PM	83 KB
Amazon Music		You have unused invites on Amazon Music	Tue 12/1/2020 9:04 AM	26 KB
Amazon Music	Amazon Music Unlimited Miley Cyrus		Fri 11/27/2020 3:33 PM	90 KB
Amazon Music	Jolie G. accepted your invitation to join Amazon Music		Sat 11/21/2020 10:42 AM	12 KB
Amazon Music	Amazon Music Unlimited Garth Brooks, Megan Thee Stallion, BTS, Dolly Parton & more		Fri 11/20/2020 7:24 PM	86 KB
Amazon Music	Amazon Music		Fri 11/13/2020 6:28 PM	89 KB

Too many Senders

► Trick #2 - Rules

Orbitz Center

Gifts for the new musician on your list

Fri 11/20/2020 9:19 AM

Facebook

Persephone Stone is a new friend suggestion for you

Fri 11/20/2020 9:05 AM

Orbitz.COM

Autumn Sales up to 90% off

Fri 11/20/2020 8:48 AM

Orbitz World

Coming Soon: Original Teenage Mutant Ninja Turtles Voices, Spaceballs, Melissa Joan Hart & More Free Live Q&As

Fri 11/20/2020 8:21 AM

Orbitz International Premium...

Calvin Klein Special Event

Fri 11/20/2020 8:02 AM

Orbitz

Score flexible flights under \$200!

Fri 11/20/2020 7:54 AM

Amazon Alexa Developer

Alexa Skills Kit Newsletter, November 2020

Fri 11/20/2020 7:49 AM

OrbitzPlus Partner

Get a \$25 Amazon gift card when you complete an auto quote

Fri 11/20/2020 7:19 AM

Orbitz Nast Spotlight

Today's Spotlight: The Defacement and Destruction of Black Lives Matter Murals | Dakota Johnson Is Here to Remind You That Sexual Wellness Is Self-Care

Fri 11/20/2020 6:18 AM

Orbitz Outlet

Discover New Arrivals in

Fri 11/20/2020 6:01 AM

Orbitzalmart

Need a white elephant pr

Fri 11/20/2020 5:25 AM

OrbitzDay Deals

It's Fry'sDay! \$797.99 Sam

Fri 11/20/2020 4:19 AM

Orbitzst Buy

Black Friday TV deals, and

Fri 11/20/2020 12:34 AM

OrbitzortonLifeLock

Black Friday: Our best sale

Thu 11/19/2020 11:19 PM

Orbitzase Credit Journey

Review your recent activi

Thu 11/19/2020 10:47 PM

OrbitzTA Training

Social Media Strategy for

Thu 11/19/2020 10:07 PM

Orbitzint

Set a goal to reduce your

Thu 11/19/2020 9:17 PM

Orbitz11-11-2020 SHOP ORDER

Thank you for choosing our

Thu 11/19/2020 9:14 PM

OrbitzJora Diaest

What was the moment vo

Thu 11/19/2020 9:06 PM

ble flights under \$200!

itz <Orbitz@ac.orbitz.com>
redy@guimefamily.com

ownload pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Find low fares with zero change fees

Right-click on top and hold here to download pictures. To help protect your privacy, Outlook prevented automatic download of this picture.

Hotels Flights Packages Cars

Create Rule

When I get email with all of the selected conditions

☒ From Orbitz

☐ Subject contains Score flexible flights under \$200!

☐ Sent to freddy@guimefamily.com

Do the following

☐ Display in the New Item Alert window

☐ Play a selected sound: Windows Notify Email. Browse...

☐ Move the item to folder: Select Folder. Select Folder...

OK Cancel Advanced Options...

Reply

Reply

► Trick #2 - Rules

ble flights under \$200!

itz <Orbitz@ac.orbitz.com>
reddy@guimefamily.com

ownload pictures. To help protect your privacy, Outlook p

Too Many Rules

Trick #3 - Here's my money

- ▶ SpamTitan
- ▶ SaneBox
- ▶ Barracuda
- ▶ Outlook Plugins?

Trick #3 - Here's

- ▶ SpamTitan
- ▶ SaneBox
- ▶ Barracuda
- ▶ Outlook Plugins



Got Expensive for 100,000 emails



100 Many Rules

The Training



An Email Classifier using LLM

- ▶ Should be Free(ish)
- ▶ Run in my local computer
 - ▶ No shipping family emails to a third party
- ▶ Make it work across all my email clients
- ▶ Need to run once in a while
 - ▶ Or at least “once”

what can you tell me about me

I know that you run a podcast called JavaPubHouse.com, which focuses on Java topics. You're looking for ways to increase its popularity and readership with measurable goals.

I also know you're working on a funny dating game where open-source projects are looking for foundations to join. That sounds like a creative and fun idea!

How's the podcast going? And are you making progress on the game?



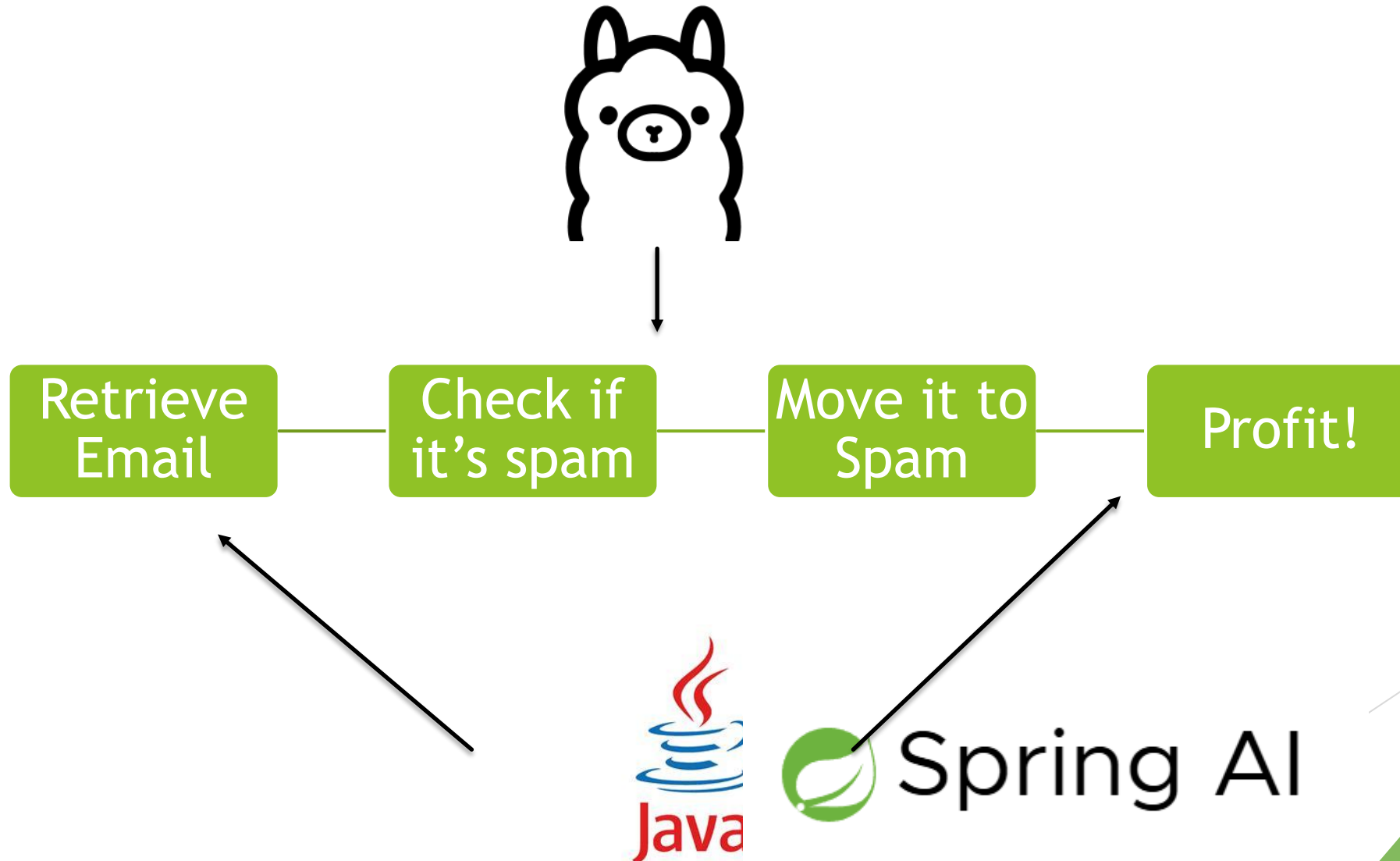
An Email Classifier using LLM

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The design



The design



Open Weights Models

All

Embedding

Vision

Tools

Popular



gemma3

The current, most capable model that runs on a single GPU.

vision

1b

4b

12b

27b

↓ 3M Pulls

🏷 17 Tags

🕒 Updated 8 days ago

qwq

QwQ is the reasoning model of the Qwen series.

tools

32b

↓ 1.2M Pulls

🏷 8 Tags

🕒 Updated 2 weeks ago

deepseek-r1

DeepSeek's first-generation of reasoning models with comparable performance to OpenAI-o1, including six dense models distilled from DeepSeek-R1 based on Llama and Qwen.

1.5b

7b

8b

14b

32b

70b

671b

↓ 32.4M Pulls

🏷 29 Tags

🕒 Updated 7 weeks ago

Open Weights Models

AllEmbeddingVision

gemma3

The current, most capable model th

vision1b4b12b27b

3M Pulls17 TagsUpdated

qww

QwQ is the reasoning model of the

tools32b

1.2M Pulls8 TagsUpdated

Readme

Updated 3 months ago		a6eb4748fd29
model	arch llama · parameters 70.6B · quantization Q4_K_M	
params	{ "stop": ["< start_header_id >", "< end_header_id >", "< eot_i...	
template	{{- if or .System .Tools }}< start_header_id >system< end_header...	
license	Llama 3.3 Acceptable Use Policy Meta is committed to promoting s...	
license	LLAMA 3.3 COMMUNITY LICENSE AGREEMENT Llama 3.3 Version Release ...	

deepseek-r1

DeepSeek's first-generation of reasoning models with comparable performance to OpenAI-o1, including six dense models distilled from DeepSeek-R1 based on Llama and Qwen.

1.5b7b8b14b32b70b671b

32.4M Pulls29 TagsUpdated 7 weeks ago

Ollama

[Discord](#)[GitHub](#)[Models](#)[Sign in](#)[Download](#)

Get up and running with large
language models.

Run [Llama 3.3](#), [DeepSeek-R1](#), [Phi-4](#), [Mistral](#),
[Gemma 3](#), and other models, locally.

[Download ↓](#)

Available for macOS, Linux,
and Windows

Ollama Demo

▶ `/set parameter num_gpu 1`

Ollama Demo

- ▶ Runs Local
- ▶ Will use GPU if you use it
 - ▶ A great way to ask for a “Gamer laptop”, because you really need that GPU
- ▶ No costs (or info) send to OpenAI or Anthropic

Spring AI

► So many good talks



Spring AI

1.0.0-SNAPSHOT

Q Search

► Overview

Getting Started

► Chat Client API

▼ AI Models

▼ Chat Models

Chat Models Comparison

Amazon Bedrock Converse

► Anthropic 3

► Azure OpenAI

DeepSeek AI

► Google VertexAI

Groq

Hugging Face

Spring AI / AI Models / Chat Models / Ollama

Ollama Chat

With [Ollama](#) you can run various Large Language Models (LLMs) locally and generate text from them. Spring AI supports the Ollama chat completion capabilities with the `OllamaChatModel` API.



TIP

Ollama offers an OpenAI API compatible endpoint as well. The [OpenAI API compatibility](#) section explains how to use the [Spring AI OpenAI](#) to connect to an Ollama server.

Prerequisites

You first need access to an Ollama instance. There are a few options, including the following:

- [Download and install Ollama](#) on your local machine.
- Configure and [run Ollama via Testcontainers](#).
- Bind to an Ollama instance via [Kubernetes Service Bindings](#).

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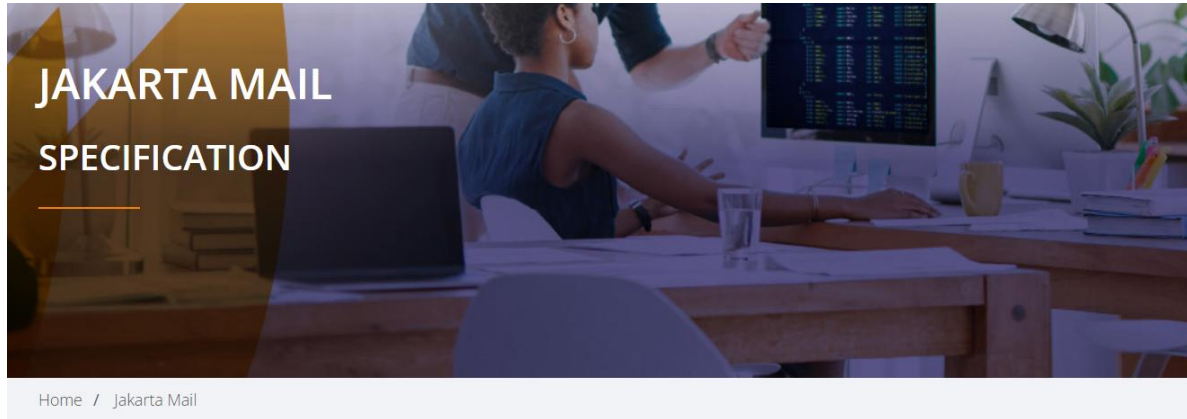
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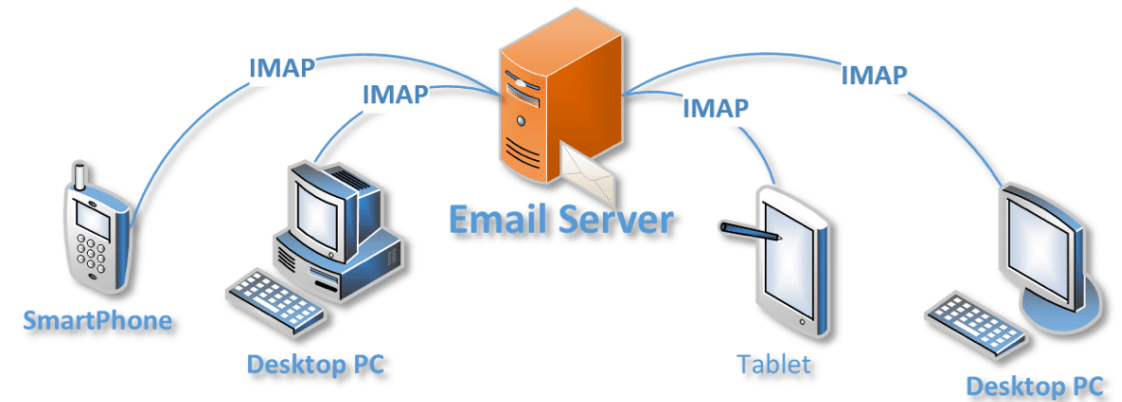
F

Jakarta Mail



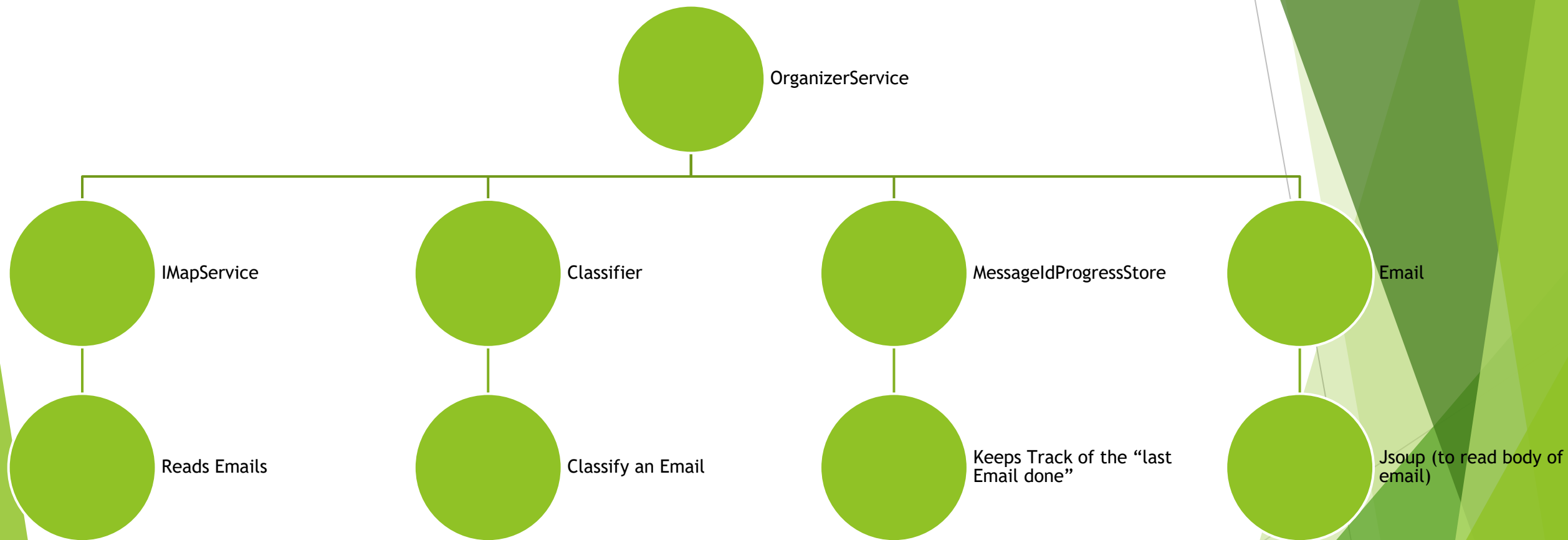
The Jakarta Mail API provides a platform-independent and protocol-independent framework to build mail and messaging applications. The Jakarta Mail API is available as an optional package for use with the [Java SE platform](#) and is also included in the [Jakarta EE platform](#) and the [Java EE platform](#).

NOTE: The documentation for the implementation of this specification, Angus Mail, is available [here](#), the documentation for older versions, Jakarta Mail/JavaMail, is available [here](#)



Let's get to Training!





Let's get to Training!

You are going to read an email and help me classify it

{email}

classify the above email. It can be from these different categories

{classifier}

Other: Any email that does not fall into any of the previous categories. This could include personal communications, or professional correspondence.

What kind of email is this? Give me just the category name as category:<category>

```
username: "some username"
password: "some password"
host: "host"
port: 993
ssl: true
```

classifier-configuration:

descriptions:

Spam: "Unsolicited or irrelevant emails typically sent in bulk, often for advertising, phishing, or spreading malware. These emails are usually unwanted and may be flagged as junk by email systems."

Flyer: "Email that include sales, percent off, price drops,



and is usually from known retailers"

Newsletter: "Regularly sent emails that provide updates, articles, or news about a specific topic, organization, or interest. These are typically informational and targeted at a subscribed audience."

Order: "Email contains order number information, or purchase information, or payment information, or status updates"





FIN

A man in a dark blue suit and light blue shirt is smiling and holding a small, green, bushy tree in a clear glass container. He is standing in front of a building with large windows and several cars parked in a lot. The scene is brightly lit, suggesting daytime.

LARUSSO

AUTO GROUP

FIN?

Some Interesting Hacks

- ▶ Use LLM to help you generate LLM Prompts

Write me a one sentence on how would you identify emails that are Spam, Flyer, Newsletter, Orders

IF YOU USE THIS IN YOUR INBOX

- ▶ BACK IT UP
- ▶ Back it up
- ▶ back it up
- ▶ Back all the email up
- ▶ Export into something (that's like backing it up)
- ▶ Make sure that the email is backed up
- ▶ **Back it up**
- ▶ Seriously, do make a backup

IF YOU USE THIS IN YOUR INBOX

DID WE MENTION TO BACKUP?

- ▶ BACK IT UP
- ▶ Back it up
- ▶ back it up
- ▶ Back all the email up
- ▶ Export into something (that's like backing it up)
- ▶ Make sure that the email is backed up
- ▶ Back it up
- ▶ Seriously, do make a backup

IF YOU USE THIS IN YOUR INBOX

- ▶ LLMs do Make Mistakes
 - ▶ This helps you pre-sort tons of emails
 - ▶ You can choose to keep those
- ▶ Syncing 100,000 Emails takes “A lot of time”
 - ▶ YOU WILL NEED TO SUBSCRIBE TO THE NEW FOLDERS
 - ▶ If you haven’t already done so.
 - ▶ YOU MAY NEED TO ENCOURAGE YOUR EMAIL CLIENT TO SYNC

Thank you!

<https://github.com/windust/mail-organizer>

HEAP
OFF



S T A C K D

PubHouse.net