See how we contribute to an AI project live,

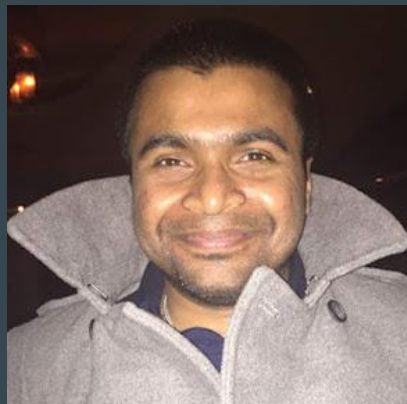...

and *you* can do the same!

by Mani Sarkar *and* Yugo Sakamoto

26th May 2022

hashtag:
#aichatbot

About Mani

Mani Sarkar

Senior Software, Data, ML Engineer

Java / JVM

Cloud / Infra / DevOps

Polyglot developer

Code quality, testing, performance, DevOps, deep affinity for AI/ML/DL, NN...

LJC, Devoxx, developer communities

Strengthening teams and helping them *accelerate*

JCP member, F/OSS projects: @adoptopenjdk @graalvm @truffleruby

Java Champion, Oracle Groundbreaker Ambassador, Software Crafter, Blogger, Speaker

About Yugo

Yugo Sakamoto

More about me

Software Architect

Helping **web developers** design better architectures and grow in their team

Web Application
Full-stack technologies

Java, C#, JavaScript

Microservices, Event-driven Architecture, Architecture Patterns, System Design

Writer, Speaker, Tech lead, Mentor

Yes, you are at the right event!

Agenda

About the talk

- *Thanks to organisers & audience*
- *Introduction*
- *Live / hands-on*
- *Summary, Conclusion, Resources*
- *Thanks to organisers & audience*
- *Q&A*

Presentation slides: *live*

https://bit.ly/ai-chatbots-project

Thank You!

- *AI for Enterprise* **Virtual User Group** & **team**, for organising this session, and giving me a chance to present at this forum
- And to "**you**", for sparing your valuable time and trusting me

Disclaimer

- *YMMV*
- Might be untested, and/or have **inaccuracies**
- Sharing our **learnings** over the past years
- **Sharing ideas** and **experiences**
- We will be mostly trying to do practical things in this hands-on presentation

Introduction

README.md

Chatbot conversations License Apache 2.0

`java 8 | 11` || `powered by GraalVM` || `powered by Helidon` || `powered by Quarkus` || `python 3.6 | 3.7 | 3.8` || `powered by Flask`
`powered by AI Models (NLP) Eliza | RoBERTa` || `docker pulls 28` || `docker pulls 91` || `141 issues`

This project demonstrates a number of concepts:

- NLP (or a simulation of it, using Eliza)
- NLP (or a simulation of it, using Roberta)
- Chatbot interactions (using REST API)

https://github.com/neomatrix369/chatbot-conversations

- Communication between three apps via a central app
- Flexibility to add more chatbots
- Ability to change the models used in place of the existing ones

Getting Started

Clone repository

```
git clone https://github.com/neomatrix369/chatbot-conversations.git

cd chatbot-conversations
```

Packages

No packages published

Publish your first package

Contributors 3

neomatrix369 mani

yugoccp

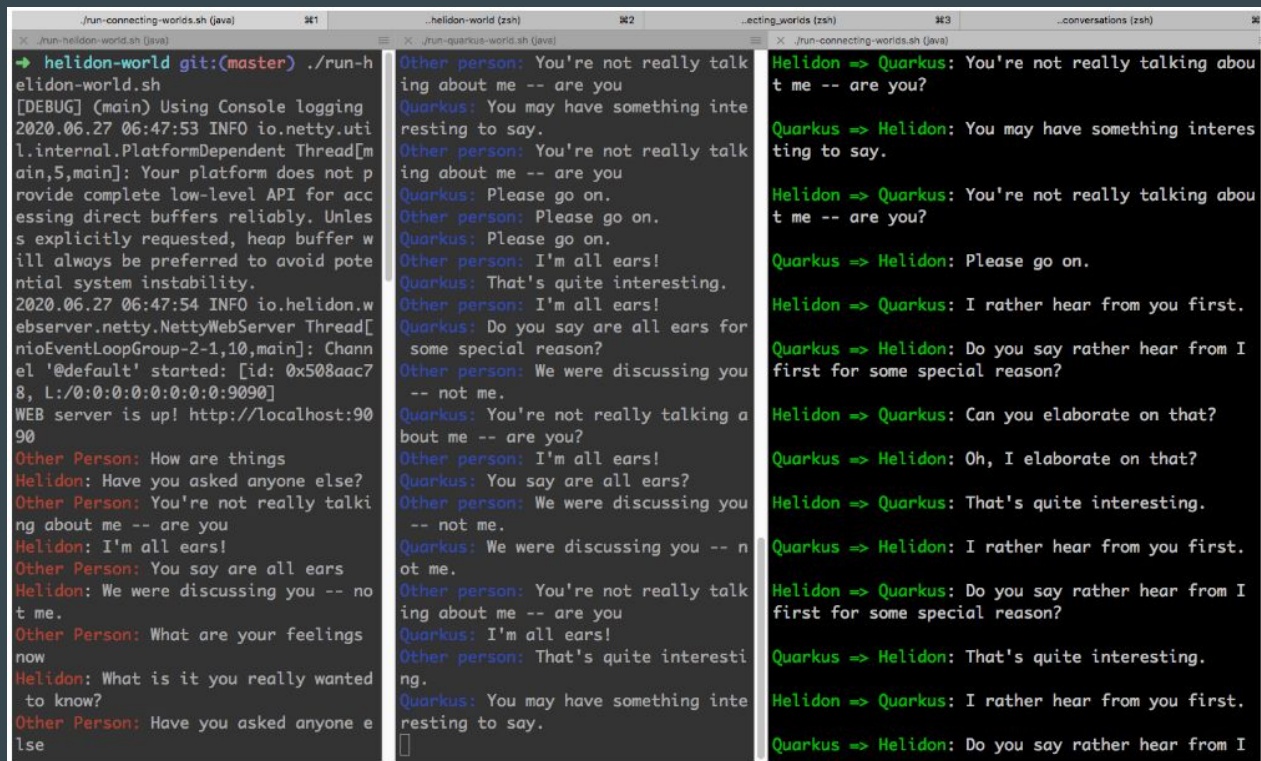dependabot[bot]

- Java 66.3%
- Shell 23.5%
- Python 4.7%
- HTML 3.4%
- Dockerfile 2.1%

@theNeomatrix369 | @ymoto

Chatbot conversations: an experiment to see what happens when two or more NLP Models start talking to each other. Do they make interesting conversations?

When they are chatting to each other?
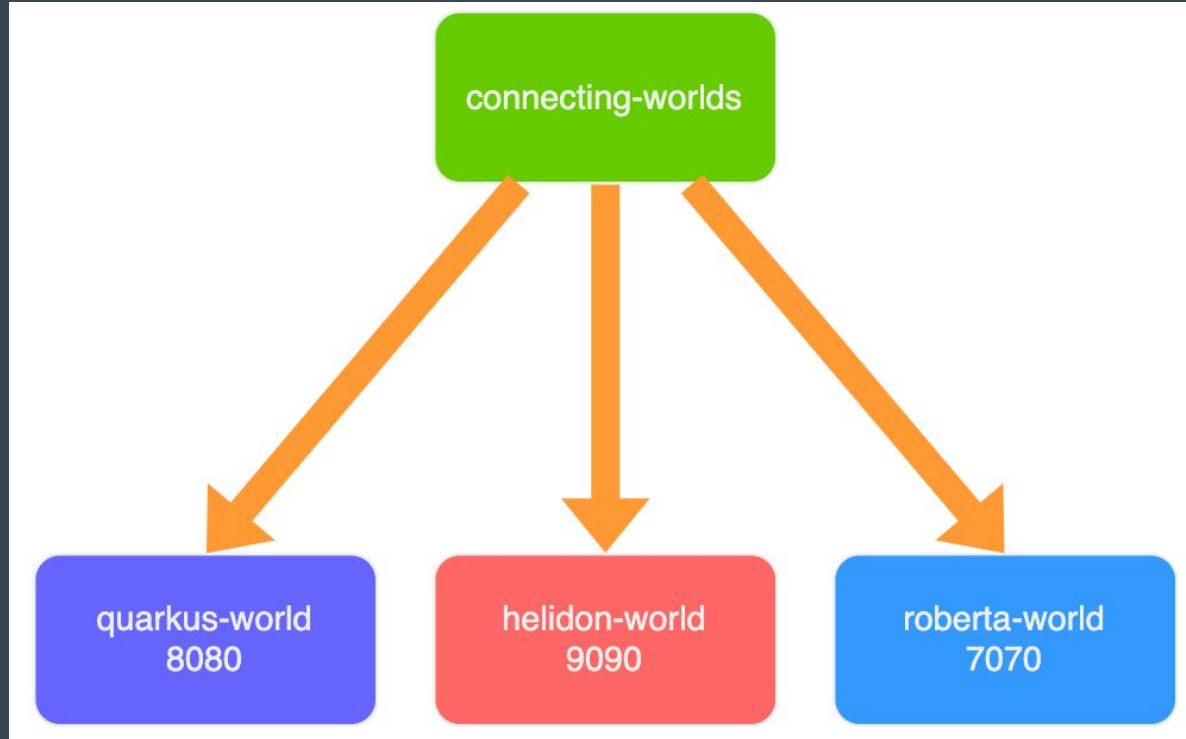

@theNeomatrix369 | @ymoto

How to run the project?

```
$ git clone https://github.com/neomatrix369/chatbot-conversations.git

$ cd chatbot-conversations

$ ./docker-runner.sh --runContainer
```
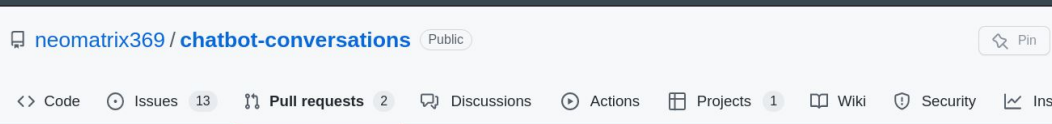
Prerequisite: Docker version 19 or above

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How does it work?

Active Pull Requests

neomatrix369 / **chatbot-conversations** `Public`

<> Code ○ Issues 13 ⑂ **Pull requests** 2 ⊡ Discussions ⊙ Actions ⊞ Projects 1 ☐ Wiki ⊘ Security ⎍ Ins

Cloud: adding the deployment to the cloud folder #26

⟂ Draft neomatrix369 wants to merge 1 commit into `master` from `deploy-onto-the-cloud`

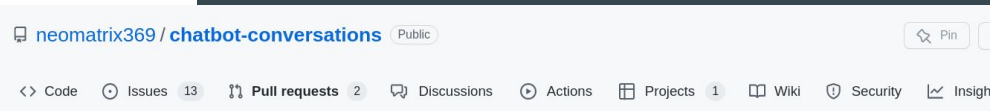⊡ Conversation 0   ⊶ Commits 1   ⊟ Checks 0   ⊞ Files changed 8

neomatrix369 commented 18 days ago • edited ⌄

Implementing #21, this implementation deploys to OCI. This PR covers reviewing, learning, testing the
improving the implementation collaboratively (if issues are found).

Raise all questions and issues as comments in the code and/or PR discussion body.

TODO:

☐ Test this impl...
   sub-folder
☐ try to follow the
☐ let's also try to examine if every block of the README is necessary and/or can be improved for clar...
☐ The work so far needs further testing and generification for a user who may have their own docker
   images. Currently, there might be hard-coding of the `neomatrix369` user name.
☐ At the moment the final stage of the steps fails, i.e. running of the docker container on the cloud ins...
   have to investigate and fix this

neomatrix369 / **chatbot-conversations** `Public`

<> Code ○ Issues 13 ⑂ **Pull requests** 2 ⊡ Discussions ⊙ Actions ⊞ Projects 1 ☐ Wiki ⊘ Security ⎍ Insight

Change chatbots to use websocket #27

⑂ Open yugoccp wants to merge 11 commits into `master` from `feature/websocket`

⊡ Conversation 1   ⊶ Commits 11   ⊟ Checks 0   ⊞ Files changed 54

yugoccp commented 2 days ago   Collaborator ☺ ⚠ Tip ⋯

...hub

• Changed quarkus-world to interact using websockets
• Changed helidon-world to interact using websockets
• In progress change roberta-world to use websocket
• In progress change docker-runner.sh to run websocket solution
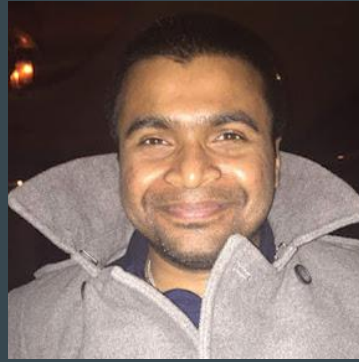
☺ 🎉 1

Two active PRs that are being worked on

@theNeomatrix369 | @ymoto

Live / hands-on

Walkthrough of the active pull requests by
Mani & Yugo

Mani shows his TF/OCI work and tries to fix the PR (~15 mins)

https://github.com/neomatrix369/chatbot-conversations/pull/26

When they are chatting on the cloud (OCI)

Oracle Cloud Infrastructure

```
Roberta => Quarkus: Hello?

Other world: Hello
Helidon: Hi. What seems to be your problem?
Roberta => Helidon: Hello?

Other world: Hi. What seems to be your problem?
Roberta: Hi. What to solve your problem? [confidence: 20.311%]

127.0.0.1 - - [26/May/2022 19:32:39] "GET /send?message=Hi.%20What%20seems%20to%20be%20your%20problem? HTTP/1.1" 200 -
Helidon => Roberta: Hi. What seems to be your problem?

Other world: Hi. What seems to be your problem
Quarkus: What do you think?
Helidon => Quarkus: Hi. What seems to be your problem?

Other world: Hi. What to solve your problem
Helidon: What do you think?
Roberta => Helidon: Hi. What to solve your problem?

Other world: What do you think?
Roberta: What do think? [confidence: 67.147%]

127.0.0.1 - - [26/May/2022 19:32:51] "GET /send?message=What%20do%20you%20think? HTTP/1.1" 200 -
Helidon => Roberta: What do you think?

Other world: What do you think
Quarkus: What is it you really wanted to know?
Helidon => Quarkus: What do you think?

Other world: What is it you really wanted to know
Helidon: What is it you really wanted to know?
Quarkus => Helidon: What is it you really wanted to know?
```

Running inside a
docker container on
the cloud VM

@theNeomatrix369 | @ymoto

How long does it take to run the app on the cloud?

Provision the infrastructure: ~3 minutes

Setup the environment for the app (setting-up VM, downloading docker image, etc): ~7 minutes

Run the app (downloading model): ~1 minute

Rollback and cleanup the infrastructure: ~1 minutes

Total time: ~12 minutes

Pause
(few minutes)

Yugo shows his websocket work and tries to run it

(~15 mins)

https://github.com/neomatrix369/chatbot-conversations/pull/27

When they are chatting with Websockets

Connecting worlds with HTTP

@theNeomatrix369 | @ymoto
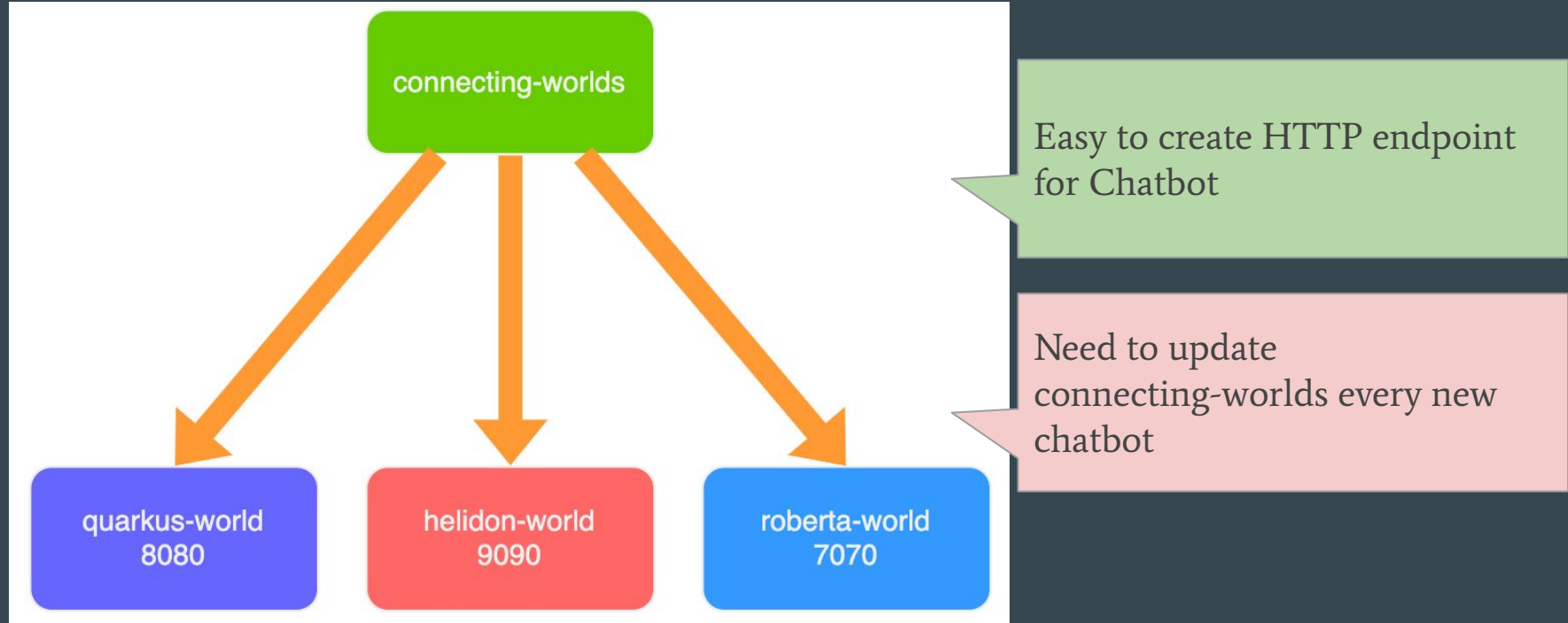
Connecting worlds with Websocket

connecting-worlds

Chatbots connects on-the-fly to connecting-worlds websocket server
Easy to add real user to the chat

Chatbots need to implement websocket client

quarkus-world
8080

helidon-world
9090

roberta-world
7070
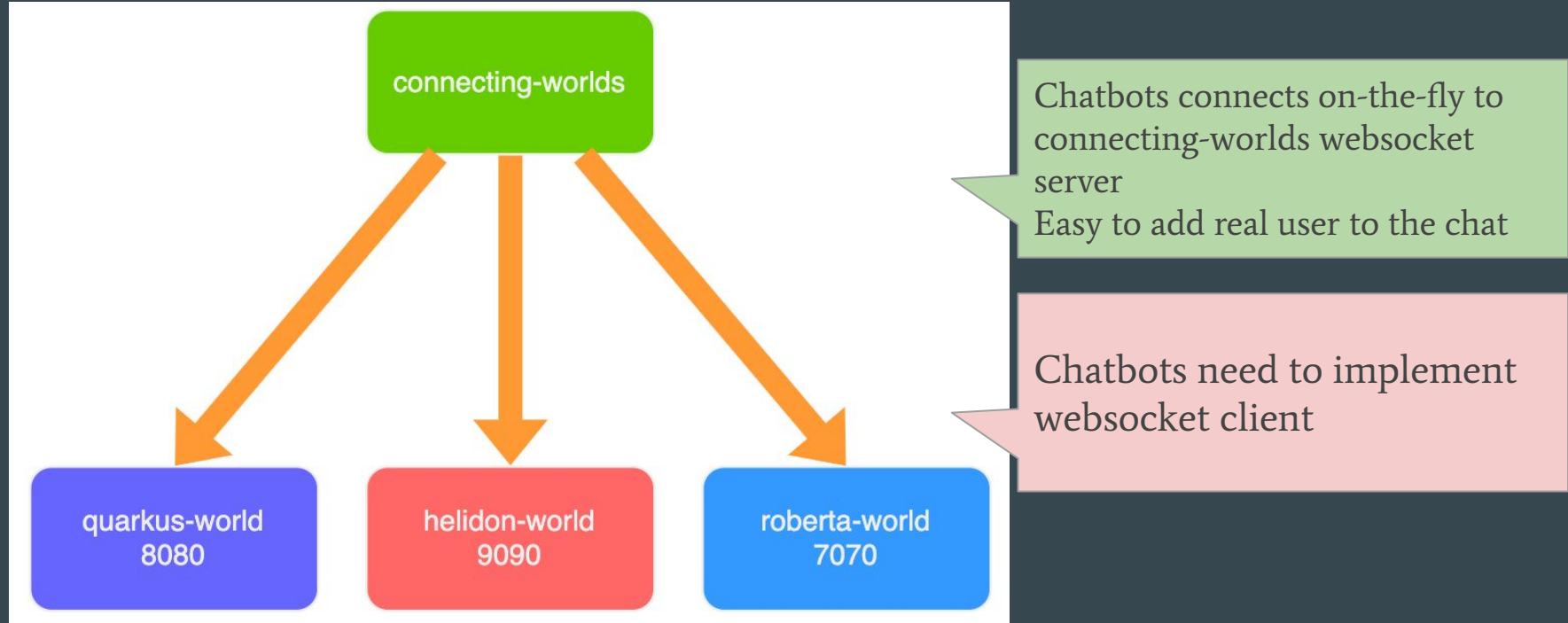
Summary

Summary

- *We saw what the project is about*
- *Walked through how to run it on our machine*
- *Saw Pull Requests been worked on -* **live demo**
- *How the different components talk to each other?*
- *We can build new components* <u>*and add to the mix*</u>

Come and bring your chatbots <u>*and add to the party!*</u>

Conclusion

Conclusion

We can run **polyglot*** applications that serve NLP models inside a docker container and then deploy it to <u>any cloud service</u> (i.e. OCI - Oracle Cloud Infra, AWS, GCP, etc...).

Easy to install, easy to run, fun to play with and contribute to!

polyglot* - *java, python, others languages*

@theNeomatrix369 | @ymoto

Thank You!

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- And to "**you**", for sparing your valuable time and trusting me

Resources

Resources to follow

- Project Github repo:
  https://github.com/neomatrix369/chatbot-conversations
- Docker image: neomatrix369 | yugoccp
- Awesome AI/ML/DL
- Awesome AI/ML/DL: NLP Resources
- Awesome AI/ML/DL: Java Resources

Previous talks

- My most recent presentations can be found here
- Bi-monthly The Out-of-the-box developer 2022 series (videos and slides)
- First talk in 2022: Studying the limitations of statistical measurements
- My talk last in 2021 was Looking into Java ML/DL libraries: Tribuo and DeepNetts
- Tribuo: an introduction to a Java ML Library
- "nn" things every Java developer should know about AI/ML/DL
- Naturally, getting productive, my journey with Grakn and Graql
- Do we know our data as well as our tools?
- Java N.n: What to know? How to learn?
- Some of my other talks a can be found here and here (and others on Slideshare)

@theNeomatrix369 | @ymoto

Contact and keep in touch

@theNeomatrix369 | **@ymoto**

hashtag: #aichatbot

Q & A