Deploying ML models and all the things that go wrong
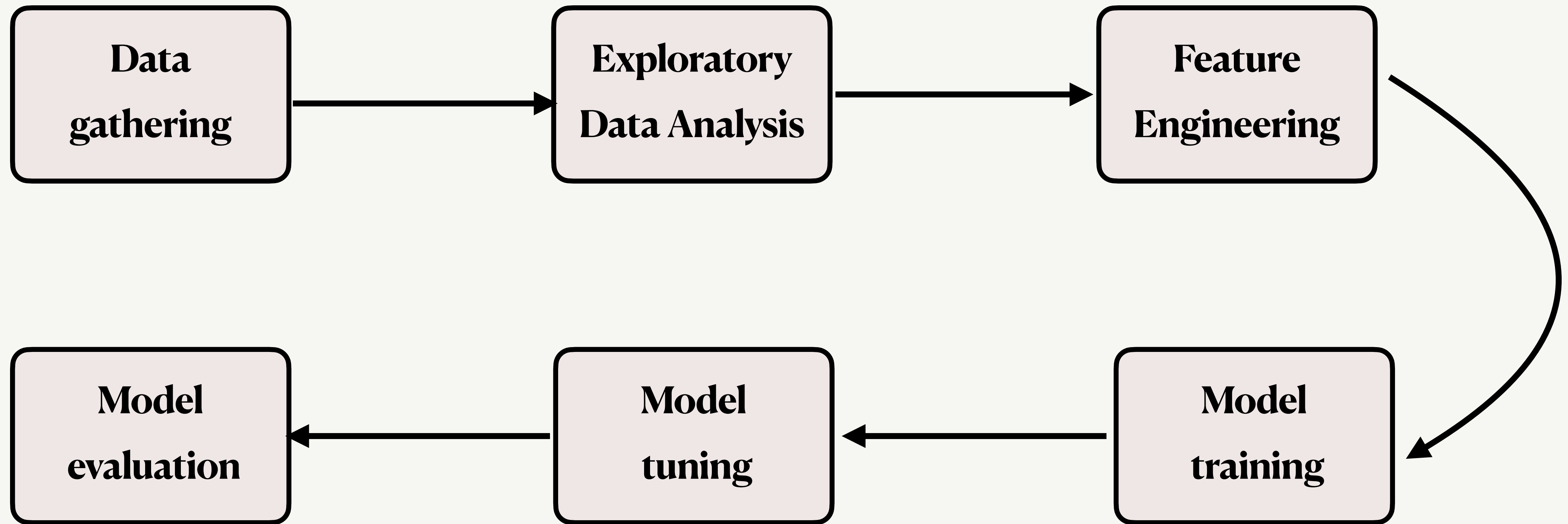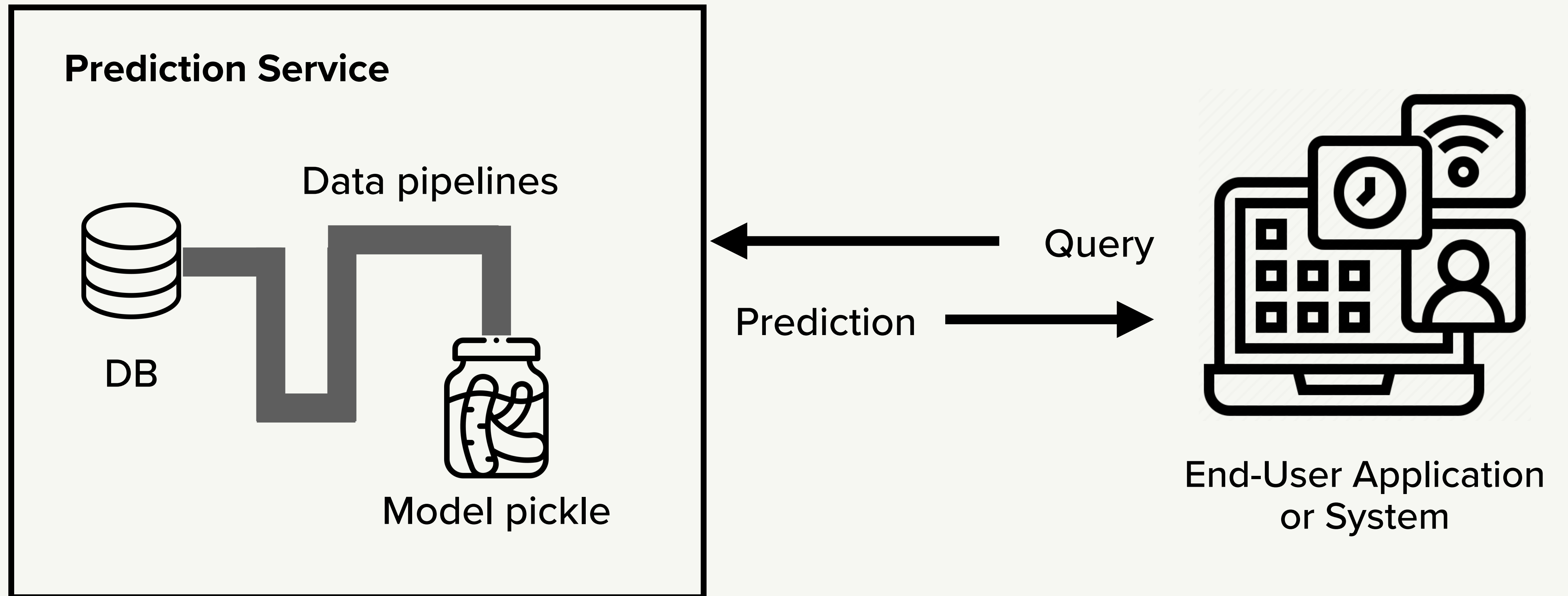
Diachuk Marianna, Data Scientist at Restream

Training a model is not the same as...

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┌─────────────┐      ┌─────────────┐      ┌─────────────┐
│    Data     │ ───▶ │ Exploratory │ ───▶ │   Feature   │
│  gathering  │      │Data Analysis│      │ Engineering │
└─────────────┘      └─────────────┘      └─────────────┘
                                                  │
                                                  ▼
┌─────────────┐      ┌─────────────┐      ┌─────────────┐
│    Model    │ ◀─── │    Model    │ ◀─── │    Model    │
│ evaluation  │      │   tuning    │      │  training   │
└─────────────┘      └─────────────┘      └─────────────┘
```

Training a model is not the same as deploying a model

Prediction Service

Data pipelines

DB

Model pickle

Query

Prediction

End-User Application or System

- Infrastructure

- Integration

- Quality of code

- Testing

- Logging

Issues to focus on during deployment

I made my share of mistakes with ML models deployment

but that's what you came for

Oops, I did it again

Who cares about scaling

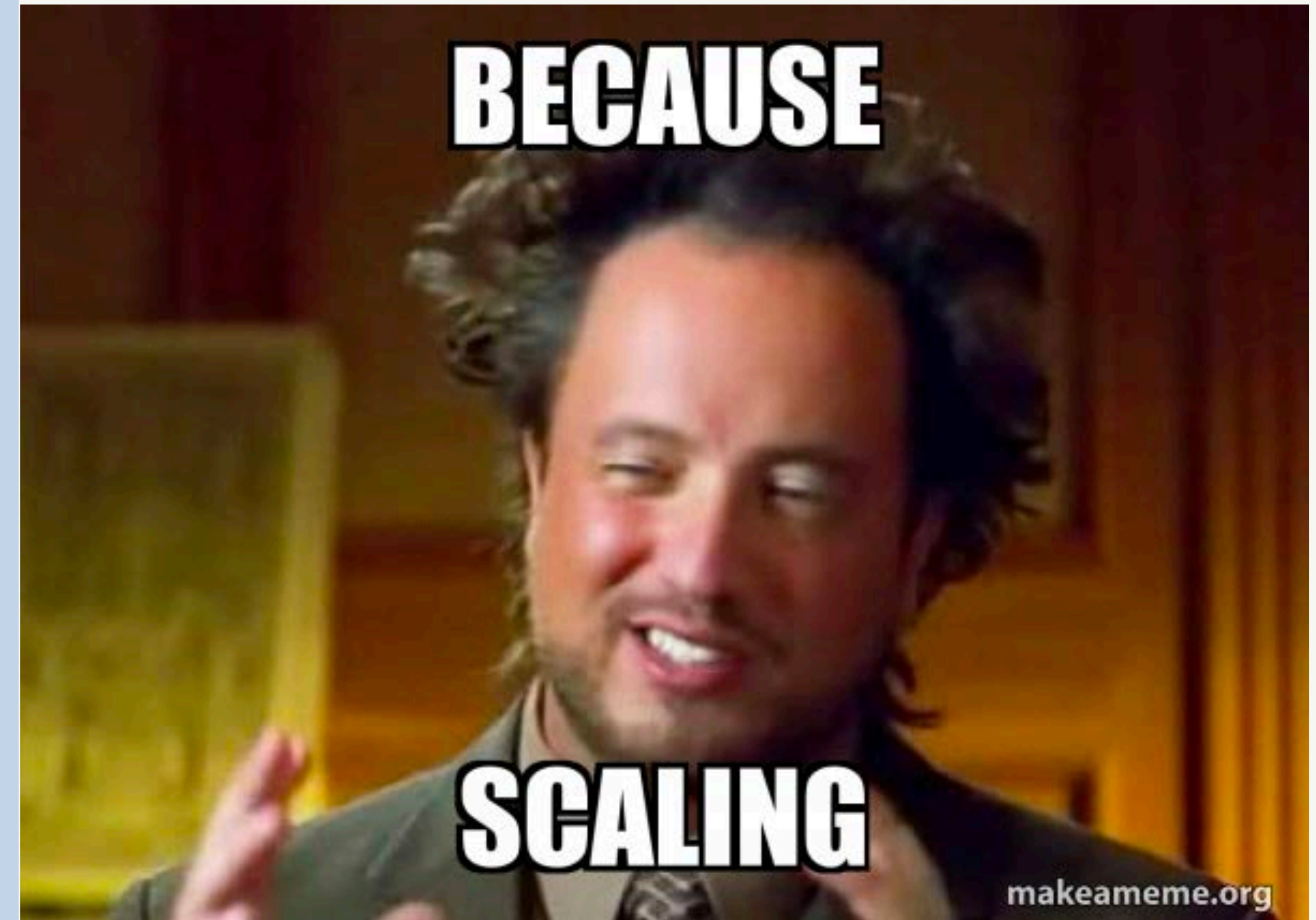or how I deployed a model like I never had to deploy any other model in the future
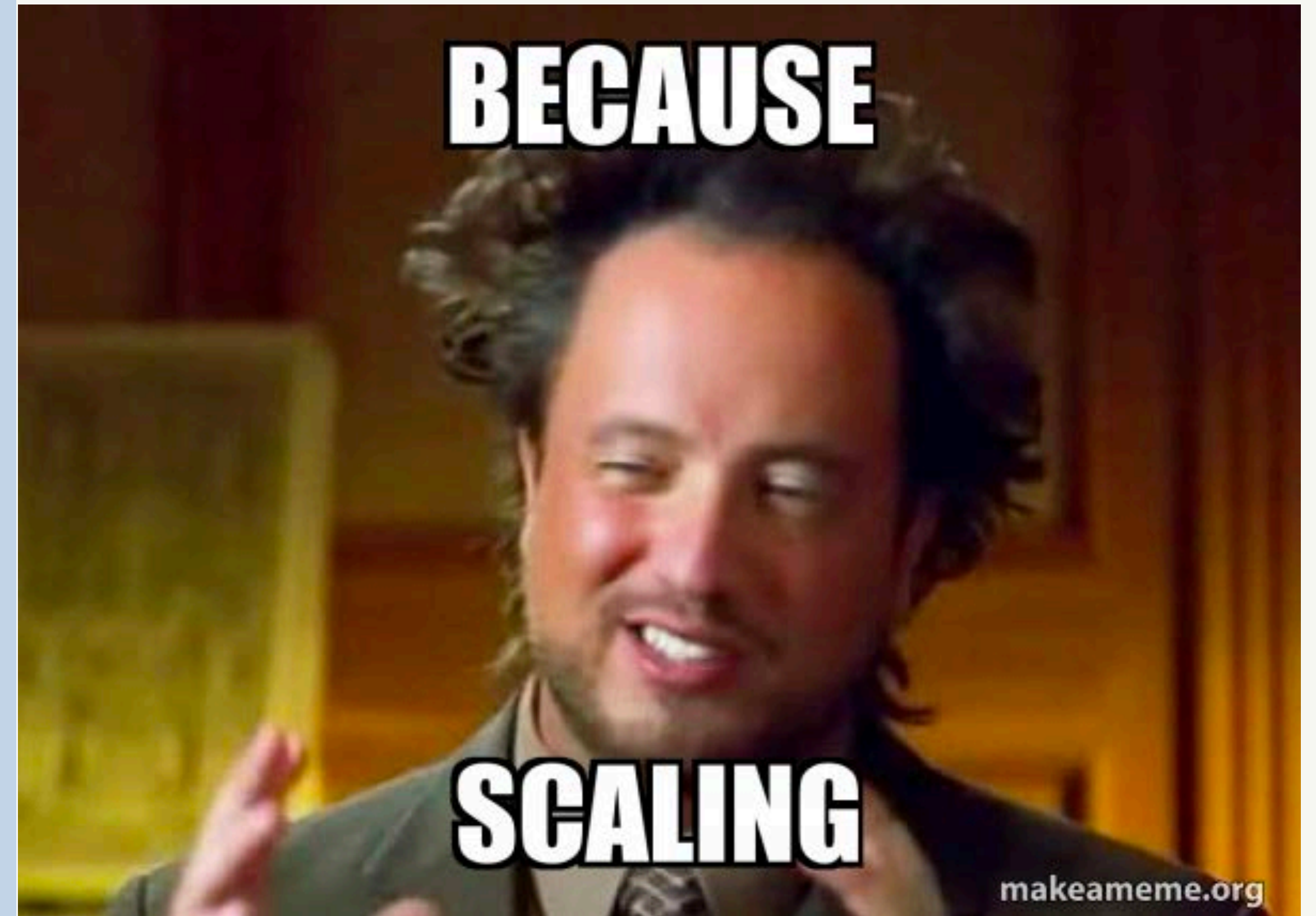
Who cares about scaling

or how I deployed a model like I never had to deploy any other model in the future

- Plan deployment thoroughly

- There's always a reason to scale

- Time used to fix something now is cheaper than it will be later

Lesson Learned

BECAUSE

SCALING

makeameme.org

You can't do everything yourself

or how I thought that doing everything yourself makes it perfect

You can't do everything yourself

or how I thought that doing everything yourself makes it perfect

- Delegation, delegation and once more, delegation

- Synchronisation of tasks in the team can work like a clock

- You're human being, you can't be everywhere at once

Lesson Learned

You are not alone

or how I failed in cooperation

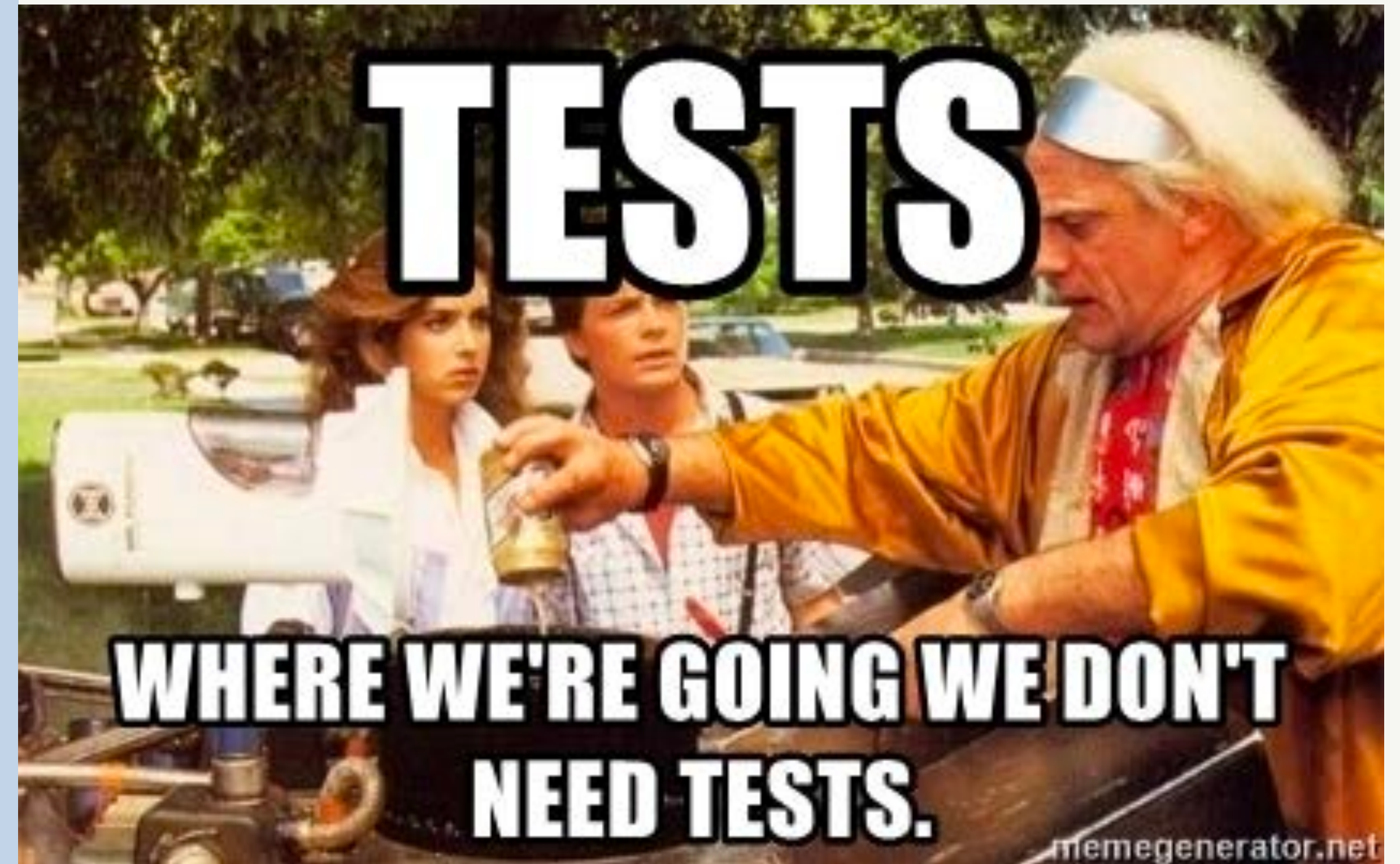# You are not alone

or how I failed in cooperation

- Cooperation shouldn't be just with data scientists

- Include other specialists in resources and projects planning

- Spread the word about the essence of data science field

Lesson Learned

Data scientists don't need test

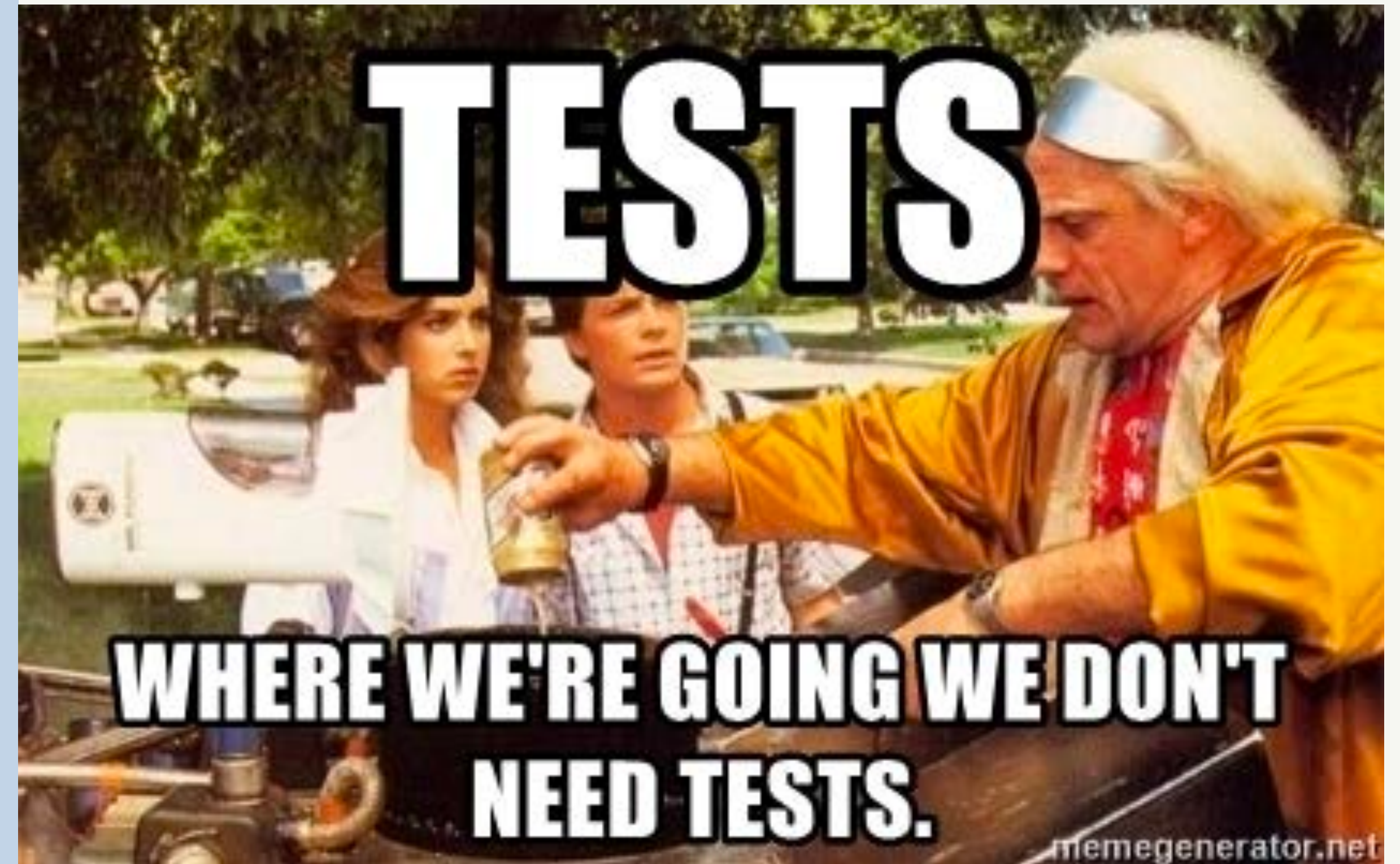### or how me and my team deployed pipelines without tests

Data scientists don't need test

or how me and my team deployed pipelines without tests

- Work with ML models needs even more tests than any other piece of code

- It's easier to write tests than to fix bugs in production 🤷‍♀️

Lesson Learned

The past is in the past

or how I didn't have time for monitoring models

The past is in the past

or how I didn't have time for monitoring models

- No monitoring -> no gain

- Model's lifecycle is not over after the deployment

- Tests may pass but other mistakes might still stay there

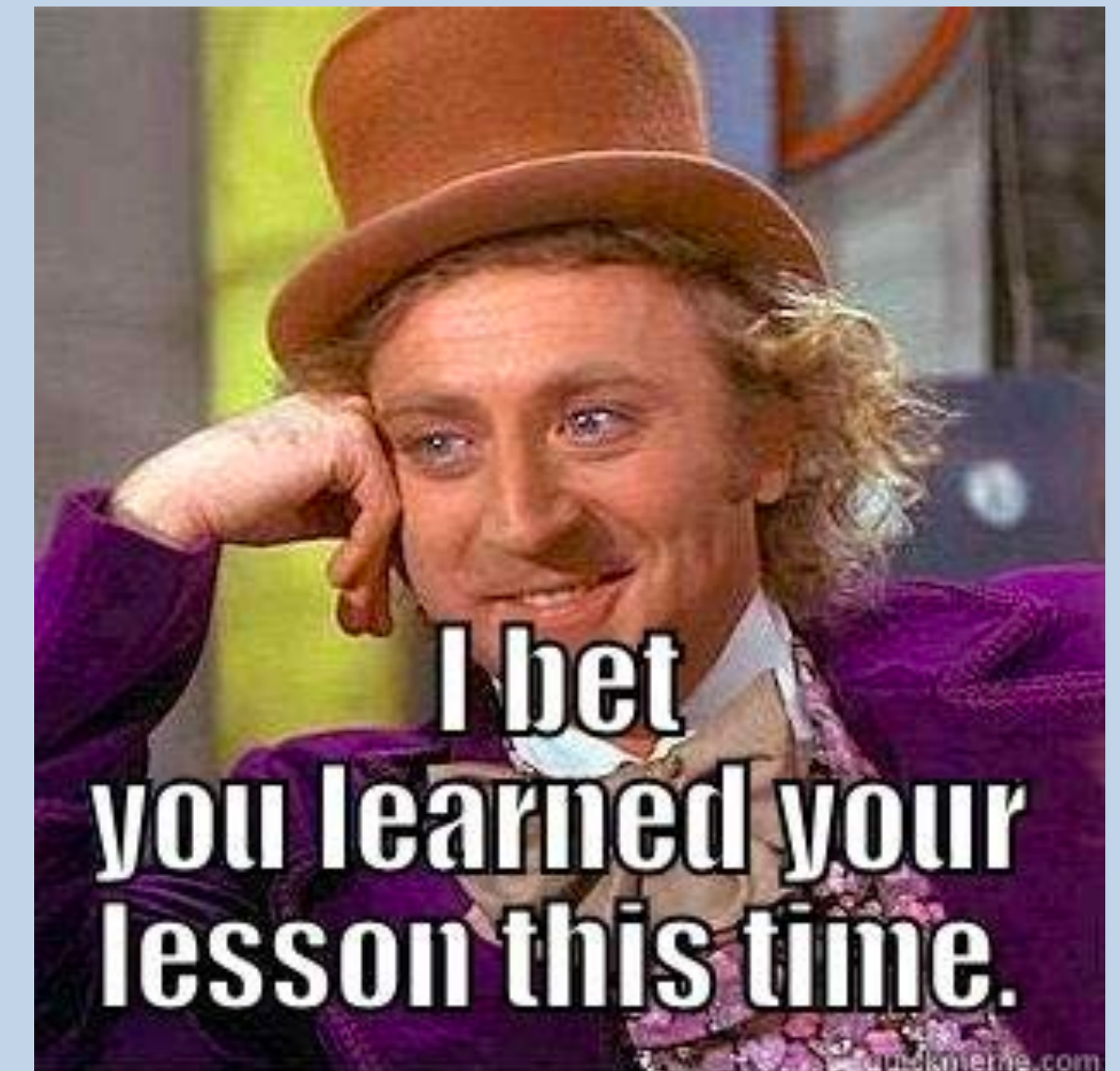- The essence of data scientists's work is to find the answer to the question "Why?"

ME
DEPLOYED MODELS
NEW PROJECTS
imgflip.com

Lesson Learned

What I've learned

and let's hope I won't fail again

- Expect and plan for scaling

- Work as a team (delegate!)

- Work with other teams and departments

- Data scientists need tests even more than anyone

- Model monitoring is the key to success

Thank you!

In production no one can hear you scream.