

The Integration of ML

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Statistisk sentralbyrå
Statistics Norway

Agenda

AI for SIC at Statistics Norway

Working solution

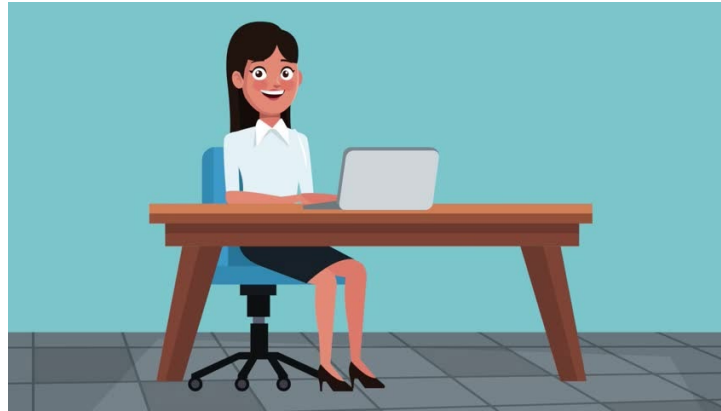
AI for SIC at Statistics Norway



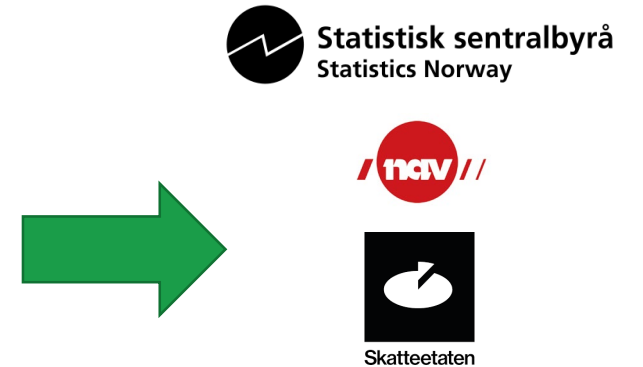


Business
Description from
the enterprise

 Brønnøysundregistrene



Coding the
enterprise

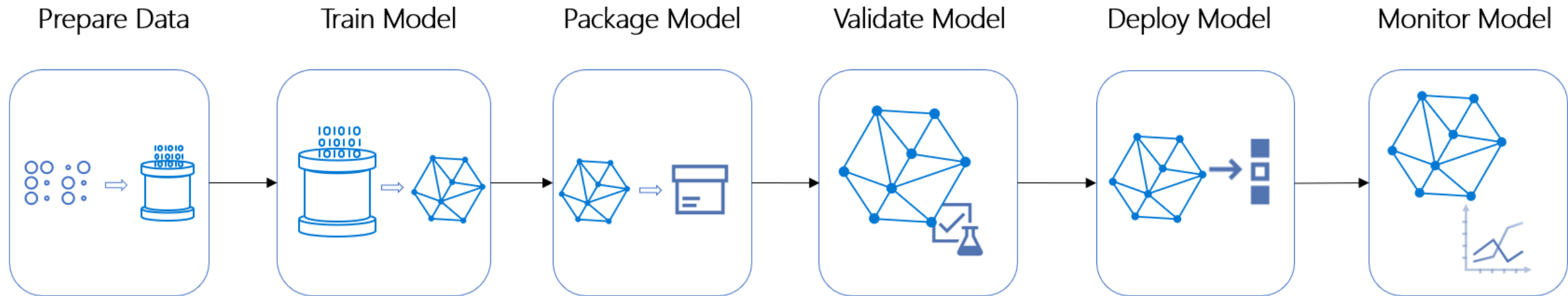


Production of
statistics etc.

Working solution



Pipeline





What do we need?

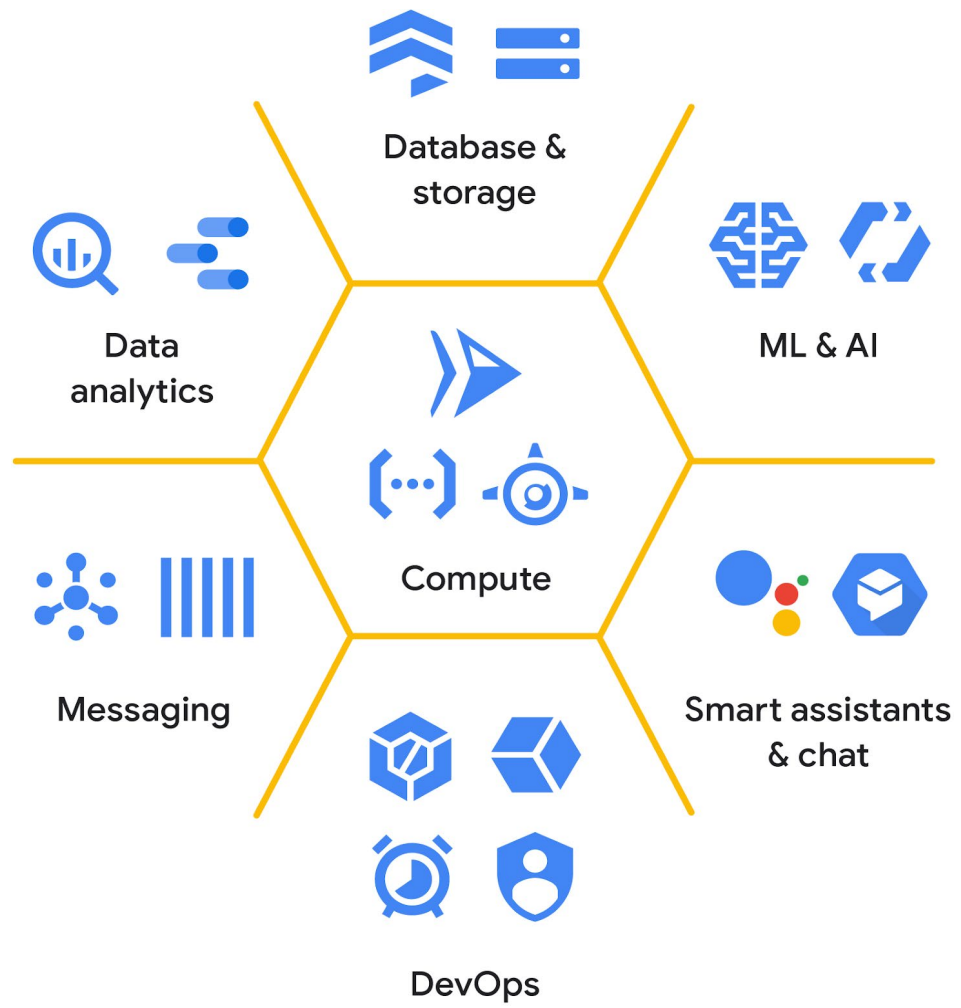
- Providing an API
- Deploy to the cloud
- Traffic splitting and Canary release
- Log and filter end-user data
- Analyze logging data
- Not specific for ML



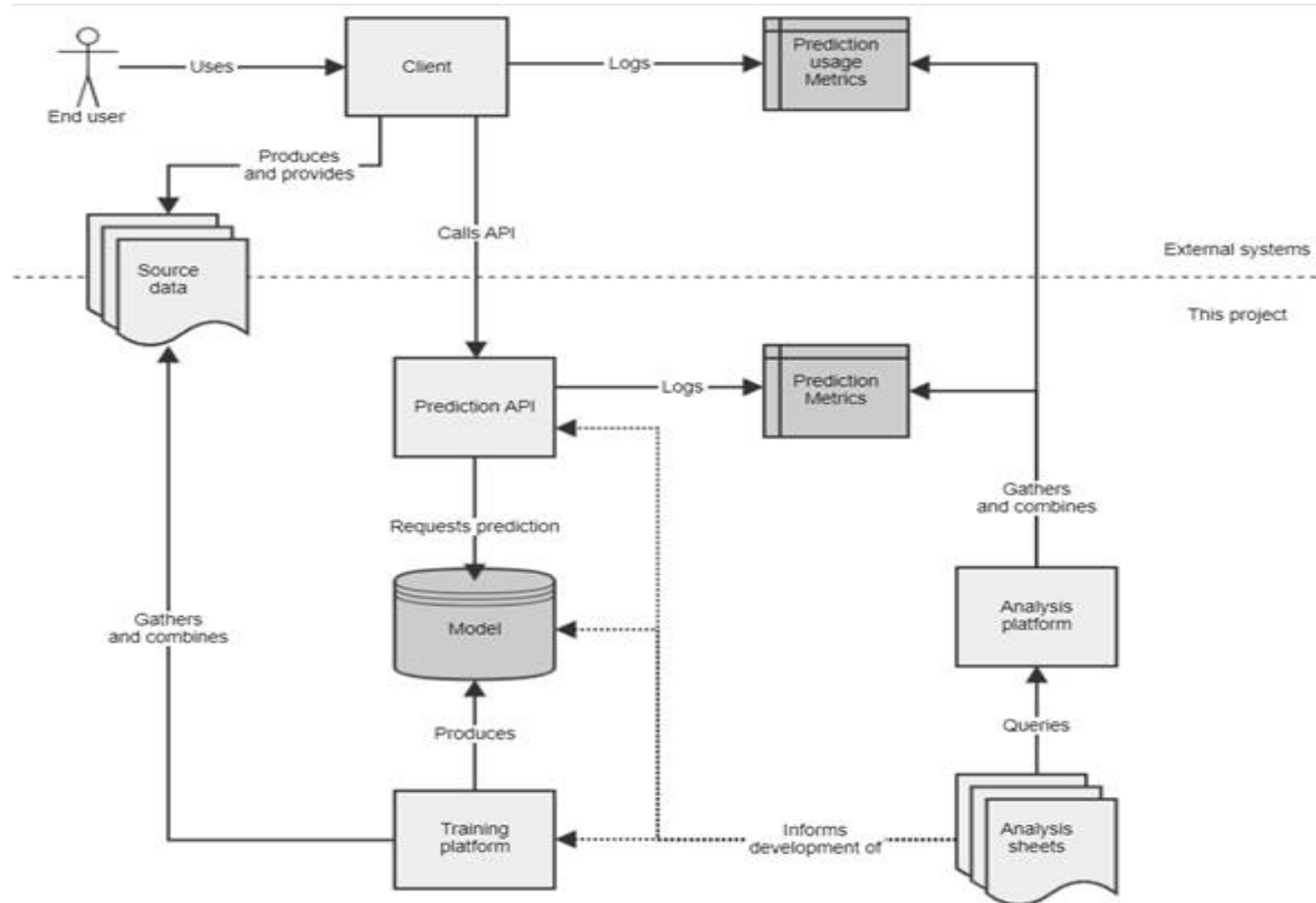


Google Cloud platform

- App engine
- Stackdriver
- Big query
- Data studio



Architecture sketch





App Engine

- Easy to use
- Application platform
- Infrastructure ?
- Deploy
- Traffic splitting
- Automated balancing



App Engine



Traffic splitting and Canary release

The screenshot shows the Google Cloud Platform console for App Engine. The page title is "Versions" for service "mysvcqa01". The "SPLIT TRAFFIC" button is highlighted with a black underline. A dropdown menu for "Service" is circled in black, showing "mysvcqa01". Below the dropdown is a "Filter versions" input field. A table lists three versions with their status, traffic allocation, instances, runtime, environment, size, and deployment date.

<input type="checkbox"/>	Version	Status	Traffic Allocation	Instances	Runtime	Environment	Size	Deployed
<input type="checkbox"/>	20190124t101405 ↗	Serving	<div style="width: 50%;"><div style="width: 50%;"></div></div> 50%	1	python27	Standard	873 B	Jan 24, 2019, 1:
<input type="checkbox"/>	20190124t085847 ↗	Serving	<div style="width: 50%;"><div style="width: 50%;"></div></div> 50%	1	python27	Standard	873 B	Jan 24, 2019, 11
<input type="checkbox"/>	20190123t130854 ↗	Serving	<div style="width: 0%;"><div style="width: 0%;"></div></div> 0%	1	python27	Standard	876 B	Jan 23, 2019, 4:t

Stackdrive for dignostics

- Monitoring
- Logging
- Debugging
- Tracing



Google Stackdriver



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BigQuery and Datastudio

- Big data
- Visualization with Datastudio
- Datastudio: Near Realtime in BIGQuery
- End-user to datastudio - couple of seconds



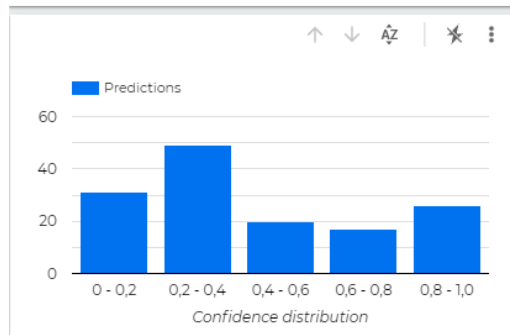
Datastudio

API Confidence

Using the confidence of the best prediction per request.
1 means the model gives a 100% probability of this prediction being correct, while 0 is a 0% probability.

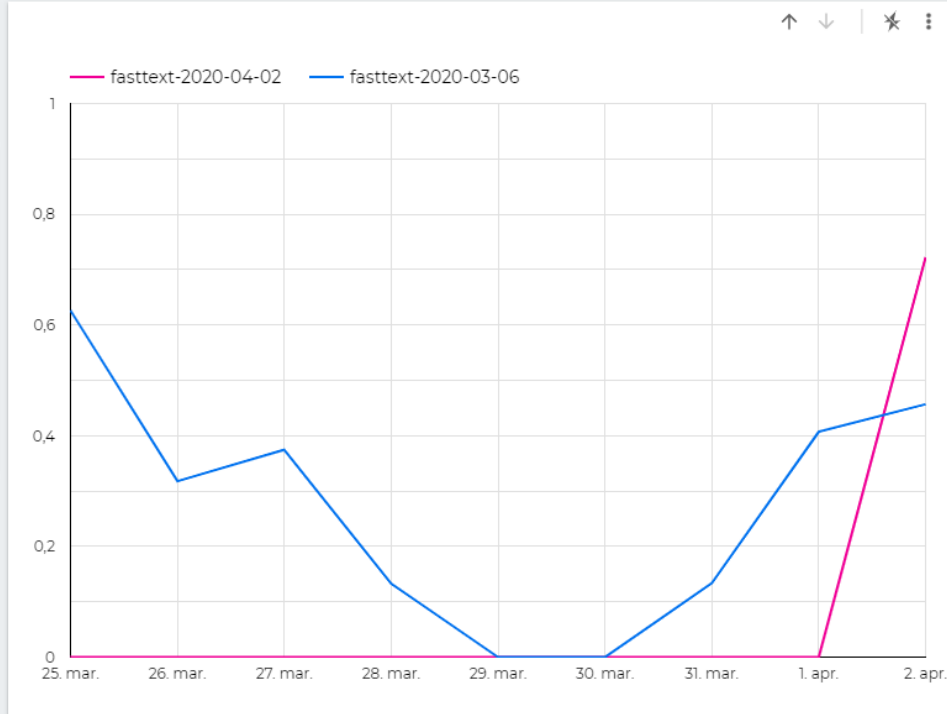
Average confidence

Overall average confidence
0,45



Model	Confidence
1. fasttext-2020-04-02	0,72
2. fasttext-2020-03-06	0,44

Average confidence per model over time



Source: Torgeir Mossige @inning, Computas AS



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Datastudio

API Predictions

Counting the number of prediction requests handled by the API, which is an indicator of the overall traffic the service receives.

Note that there will naturally occur predictions where the client (user) does not report how the prediction was used, so it is expected that the number of predictions produced is higher than the number of reported prediction usages.

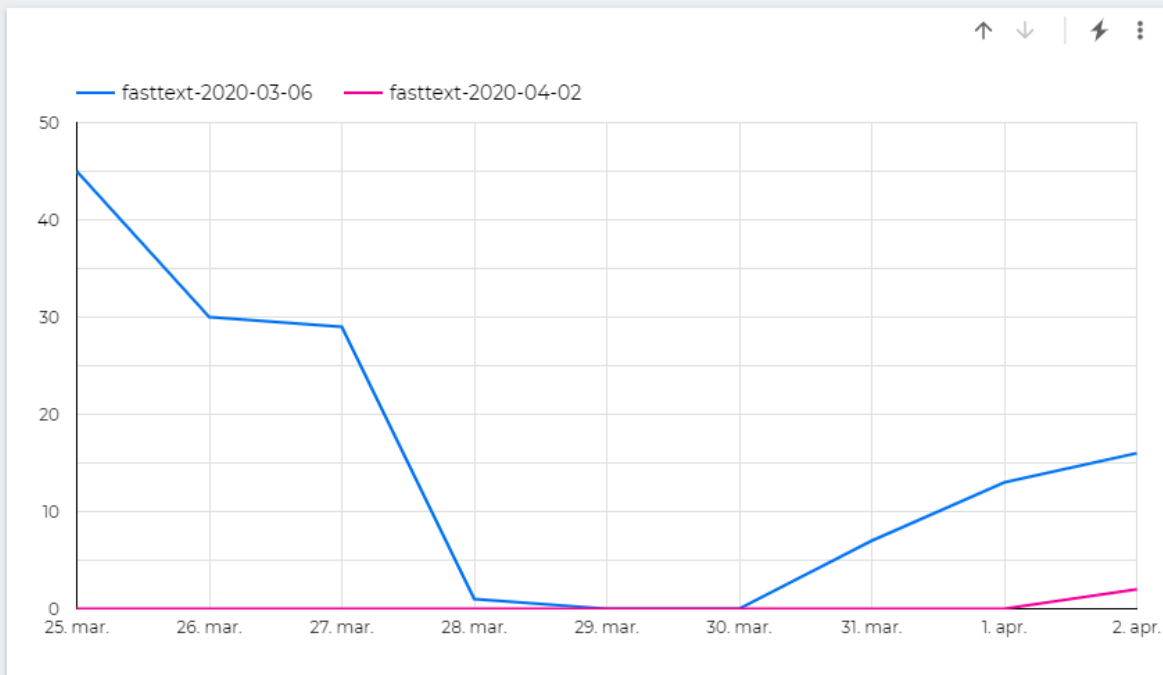
Predictions

Predictions	Models
143	2

Model	Predictions
1. fasttext-2020-03-06	141
2. fasttext-2020-04-02	2

NACE code	Times predicted
1. 82.990	34
2. 94.991	21
3. 73.110	15
4. 97.000	9

Predictions per model over time



Source: Torgeir Mossige @inning, Computas AS



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Ending notes

- Simple architecture
 - More complicated architecture ?
- Not a ML specific workflow
 - Best practises
- Not a Model specific workflow
- Git repo : https://github.com/datautvikling/nace_predictor



Thank you!

