Sequence modeling for product classification

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Flow Comerce

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3. A new approach
   - Neural networks
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4. Our classification model
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Problem statement

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$$\longrightarrow \begin{cases} \text{description: womens leather boot} \\ \text{HS6: 640391} \end{cases}$$

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Our initial approach

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Initial models

- TFIDF encoded representation of text;
- one model per organization (20-30);
- reasonably accurate.

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BUT...

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Little to no generalization

...and he huffed and he puffed and he blew the house in...

Problems!!

- TFIDF encoding doesn't capture sequence relationship well!
- Many models to keep track of!
- Hard performance evaluation!
- Some organizations have very little data to work on!
- Some organizations have a very limited catalogue (1 or 2 types of items)!

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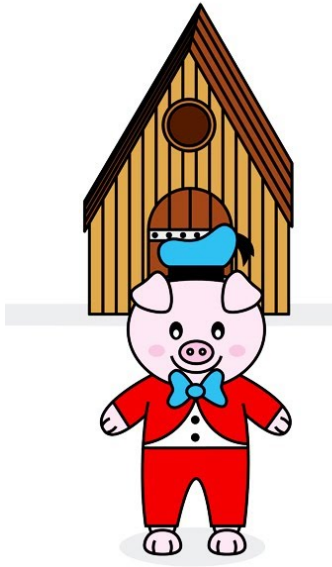
A new approach



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Sequence modeling

We want to:

- Have a single general model;
- capture information regarding patterns in sequences of words;
- be able add a new organization seamlessly (if we have seen the kind of products they sell).

These requirements suggest that we need a more sophisticated method than what we are using.

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Enter Neural Networks...

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A primer on neural networks

How Neural Networks learn

Sequence learning - Recurrent Neural Networks

Short Term memory problem - vanishing gradient

LSTM

GRU

The model

The data

Results and evaluation

Problems??

...and he huffed and he puffed, **but he hasn't blown the house in... yet...**

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Let's see it in action

Demo!

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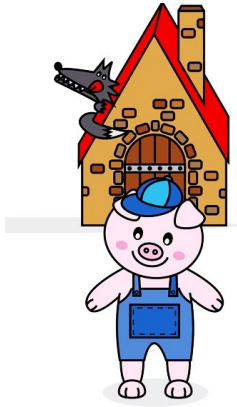
Conclusions and future work



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