Deep check: Deep learning based grammar checker.
Problem definition:
Language is really hard to analytically model and models are really hard to use effectively.
Problem definition:
Deep learning and statistical analysis – a.k.a shut up and calculate
Problem definition:

Some examples of common mistakes that fly under the radar of all current grammar checkers.

kingdom come                         spill the beans
every which way                       attorney general
by and large                          congressman at large
in short                              San Francisco etc
kick the bucket

There as many as there are lexical terms, i.e. rule explosion
Need to infer the contextual information of their surroundings
Similar solutions:

- Google’s new translation current translation model
- Google’s smart reply.
Proposed solutions:

Sequence to sequence LSTM network with one of or all the options investigated and optimized:

• Highway nodes between layers.
• Use of different attention mechanisms.
• Optimize language model for embedded words.
• Hybrid LSTM with Convolution networks
### Project plan:

#### Phase one:
- Unsupervised training: Get model to learn language from untagged corpus such as the billion word Wikipedia corpus
  - week 6
- Supervised training: Get model to correct error prone sentences.
  - week 7
- Test various architectures, i.e. modify attention and highway network designs
  - week 7
- Benchmark against F0.5 benchmark grammar correctors.
  - week 8

#### Phase two:
- Get model to replicate common collocation errors.
  - week 9
- Optimize model to train and learn quicker
  - week 10