



AI in the Field

Symposium on Artificial Intelligence
in Law

PRESENTED BY:

Ronald L. Chichester

Ronald Chichester, P.C.

Two Applications

- Intellectual Property
- Cybersecurity / Privacy



A stylized graphic on the left side of the slide. It features a light grey hand with fingers spread, holding a blue globe. The background is a dark blue gradient.

Intellectual Property

<http://alice.cebollita.org:8000/predict>



Ask Alice!

Let me tell you if your patent claim might be ineligible under *Alice v. CLS Bank*. Type your claim below:

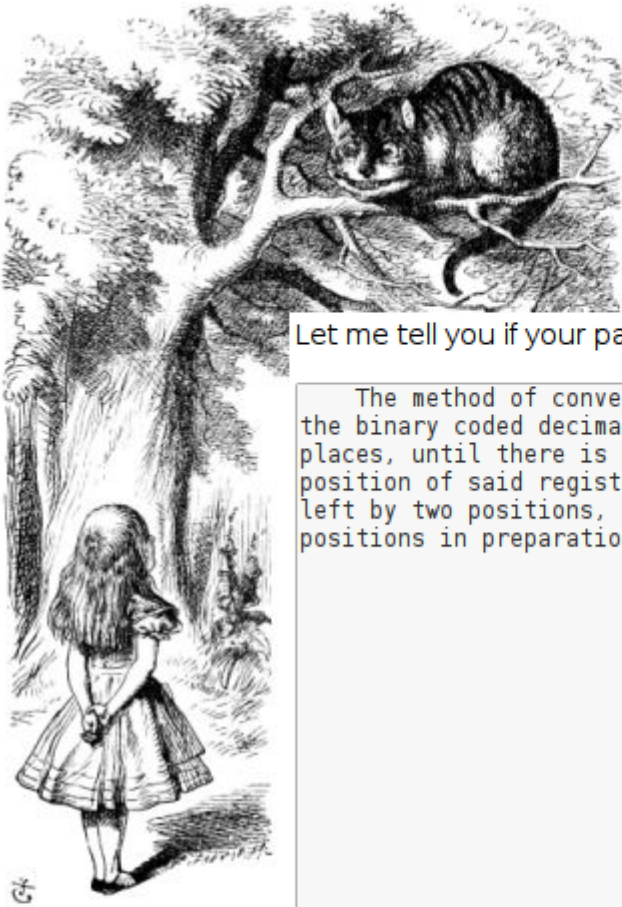
Analyze

Options:

Try some example claims from real cases:

Highlighter threshold:

Analyze claims from an issued patent:



Ask Alice!

Let me tell you if your patent claim might be ineligible under *Alice v. CLS Bank*. Type your claim below:

The method of converting signals from binary coded decimal form into binary which comprises the steps of (1) storing the binary coded decimal signals in a reentrant shift register, (2) shifting the signals to the right by at least three places, until there is a binary 1 in the second position of said register, (3) masking out said binary 1 in said second position of said register, ((4) adding a binary 1 to the first position of said register, (5) shifting the signals to the left by two positions, (6) adding a 1 to said first position, and (7) shifting the signals to the right by at least three positions in preparation for a succeeding binary 1 in the second position of said register.

Analyze

Options:

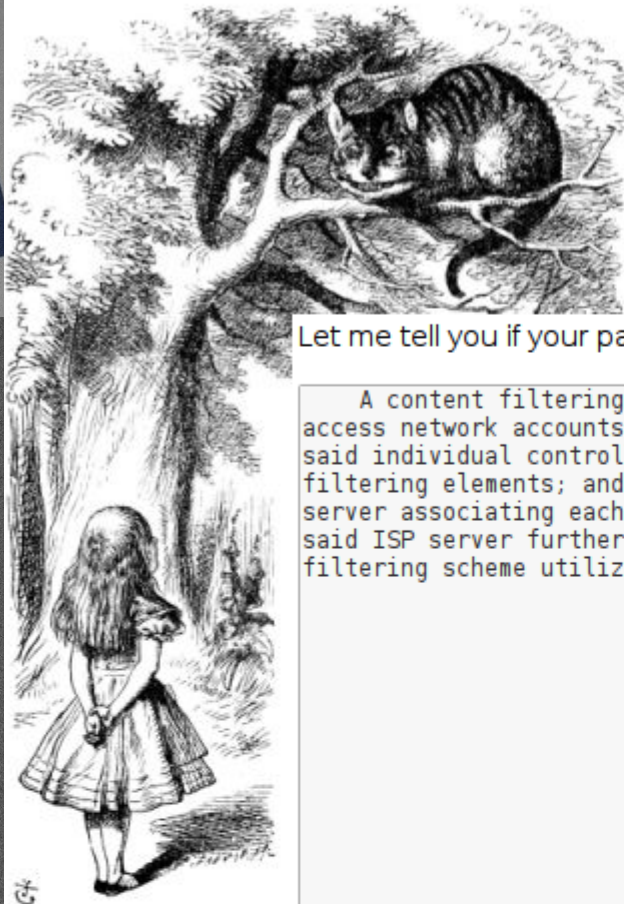
Try some example claims from real cases:

Highlighter threshold:

Analyze claims from an issued patent:

Prediction: **NOT ELIGIBLE** (56% ensemble agreement)

Processed claim: code ad right decim regist binari method store form step succeed convert shift signal mask place posit prepar left



Ask Alice!

Let me tell you if your patent claim might be ineligible under *Alice v. CLS Bank*. Type your claim below:

A content filtering system for filtering content retrieved from an Internet computer network by individual controlled access network accounts, said filtering system comprising: a local client computer generating network access requests for said individual controlled access network accounts; at least one filtering scheme; a plurality of sets of logical filtering elements; and a remote ISP server coupled to said client computer and said Internet computer network, said ISP server associating each said network account to at least one filtering scheme and at least one set of filtering elements, said ISP server further receiving said network access requests from said client computer and executing said associated filtering scheme utilizing said associated set of logical filtering elements.

Analyze

Options:

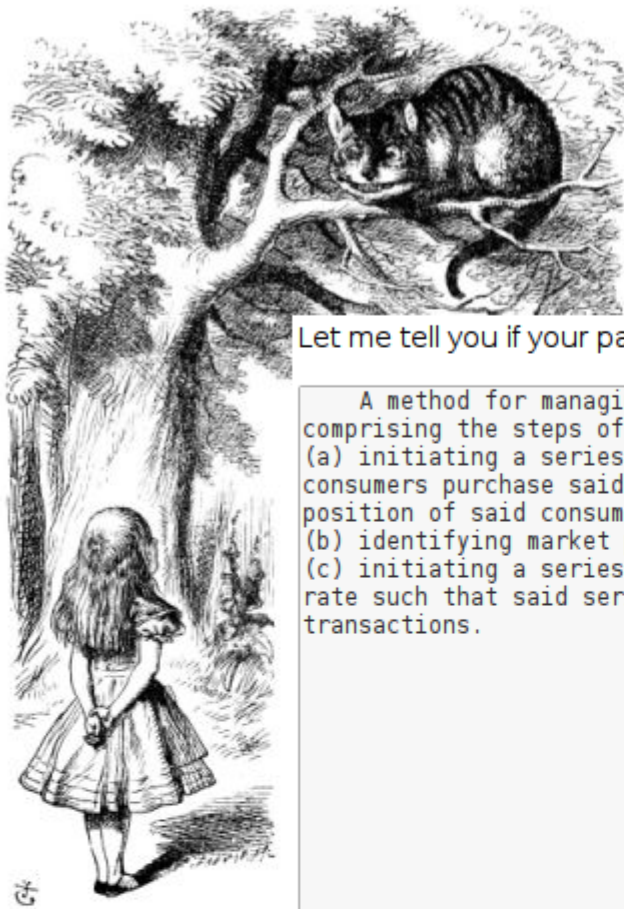
Try some example claims from real cases:

Highlighter threshold:

Analyze claims from an issued patent:

Prediction: **ELIGIBLE** (66% ensemble agreement)

Processed claim: control set comput execut individu element content network coupl receiv access internet scheme local gener util associ account retriev remot request server filter client logic



Ask Alice!

Let me tell you if your patent claim might be ineligible under *Alice v. CLS Bank*. Type your claim below:

A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
(a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
(b) identifying market participants for said commodity having a counter-risk position to said consumers; and
(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed ratesuch that said series of market participant transactions balances the risk position of said series of consumer transactions.

Analyze

Options:

Try some example claims from real cases:

Highlighter threshold:

Analyze claims from an issued patent:

Prediction: **NOT ELIGIBLE** (100% ensemble agreement)

Processed claim: purchas identifi consum correspond rate cost market transact particip method price risk sold initi step
averag provid counter histor manag balanc posit consumpt commod fix seri

A stylized graphic on the left side of the slide depicts a hand holding a globe. The hand is rendered in a light grey color, with the fingers curved as if supporting a globe. The globe is shown in two shades of blue: a darker blue for the upper portion and a lighter blue for the lower portion. The entire graphic is set against a dark blue background.

Cybersecurity & Privacy

Data Breach/Notification

- 48 States + PR + DC + VI
- All Different!
 - Cover Different Things
 - Timing Differs
 - Reporting Differs
 - Penalties Differ

Data Breach/Notification

Law is Evolving Rapidly

Data Breach/Notification



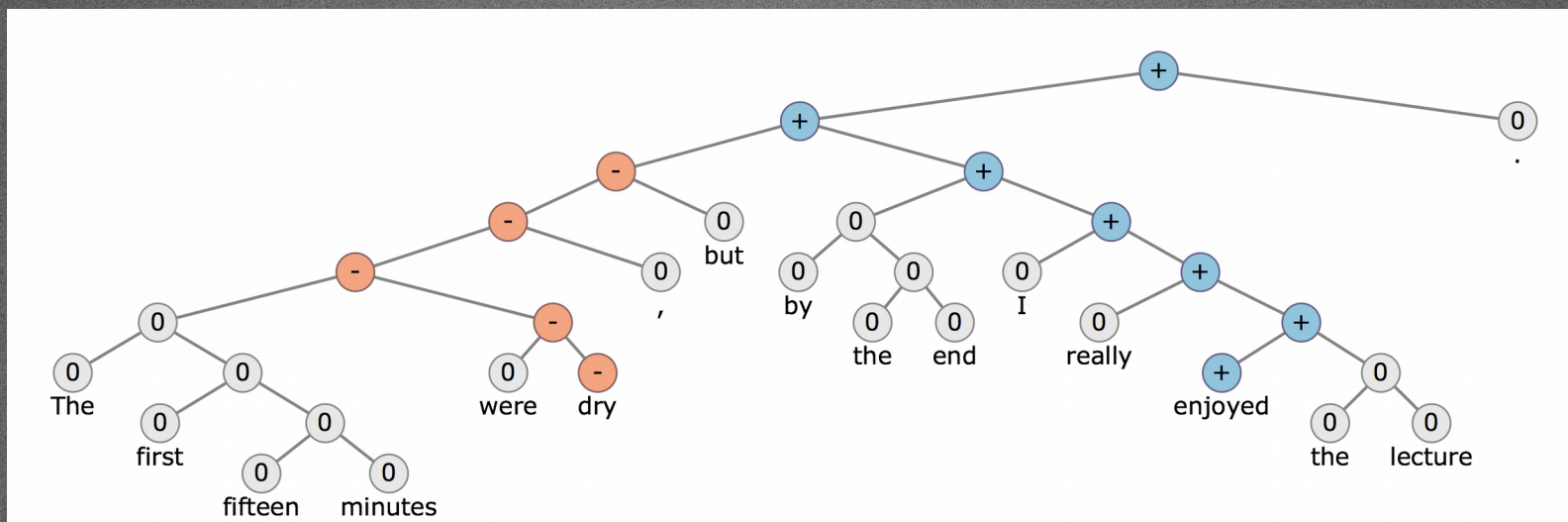
Data Breach/Notification

Natural Language Processing

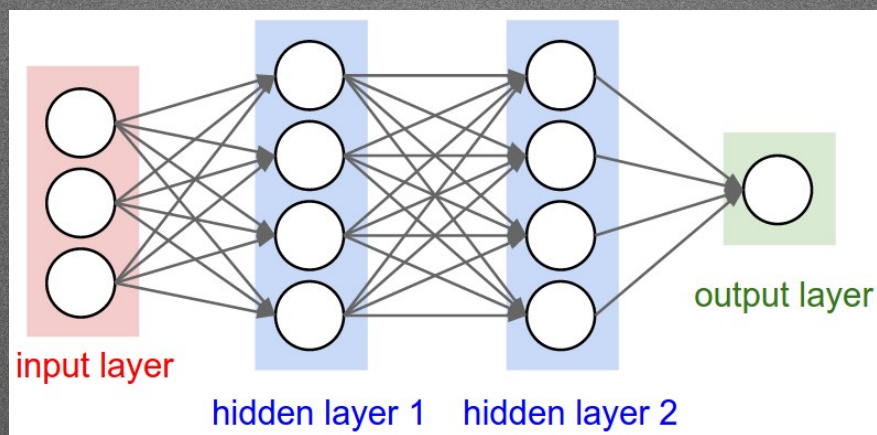
+

Neural Networks

Data Breach/Notification



+



Natural Language Processing

Why Natural Language Toolkit (NLTK)?

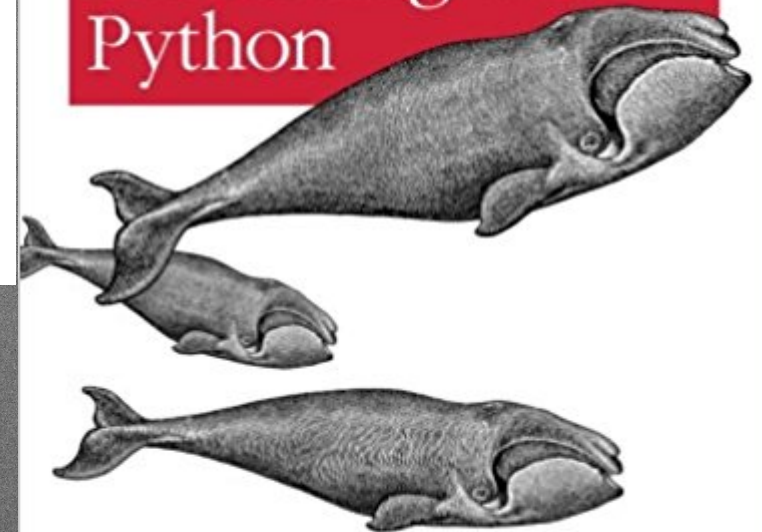
- Platform for implementing Natural Language Processing through Python programs
- Huge database of corpora and lexical resources with an easy interface
- Built-in libraries of several text processing algorithms
- **Open Source!**



python™

Analyzing Text with the Natural Language Toolkit

Natural Language Processing with Python



O'REILLY®

Steven Bird, Ewan Klein & Edward Loper

Indiana Code Tokenized

```
>>> print tokens
['IC', '4-1-11', 'Chapter', '11', 'Notice', 'of', 'Security', 'Breach', 'IC', '4-1-11-1', 'Applicability', 'Sec', '1', 'This', 'chapter', 'applies', 'after', 'June', '30', '2006', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-2', 'Breach', 'of', 'the', 'security', 'of', 'the', 'system', 'Sec', '2', 'As', 'used', 'in', 'this', 'chapter', 'breach', 'of', 'the', 'security', 'of', 'the', 'system', 'means', 'unauthorized', 'acquisition', 'of', 'computerized', 'data', 'that', 'compromises', 'the', 'security', 'confidentiality', 'or', 'integrity', 'of', 'personal', 'information', 'maintained', 'by', 'a', 'state', 'or', 'local', 'agency', 'The', 'term', 'does', 'not', 'include', 'the', 'following', '1', 'Good', 'faith', 'acquisition', 'of', 'personal', 'information', 'by', 'an', 'agency', 'or', 'employee', 'of', 'the', 'agency', 'for', 'purposes', 'of', 'the', 'agency', 'if', 'the', 'personal', 'information', 'is', 'not', 'used', 'or', 'subject', 'to', 'further', 'unauthorized', 'disclosure', '2', 'Unauthorized', 'acquisition', 'of', 'a', 'portable', 'electronic', 'device', 'on', 'which', 'personal', 'information', 'is', 'stored', 'if', 'access', 'to', 'the', 'device', 'is', 'protected', 'by', 'a', 'password', 'that', 'has', 'not', 'been', 'disclosed', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-3', 'Personal', 'information', 'Sec', '3', 'As', 'used', 'in', 'this', 'chapter', 'personal', 'information', 'means', '1', 'an', 'individual', 's', 'A', 'first', 'name', 'and', 'last', 'name', 'or', 'B', 'first', 'initial', 'and', 'last', 'name', 'and', '2', 'at', 'least', 'one', '1', 'of', 'the', 'following', 'data', 'elements', 'A', 'Social', 'Security', 'number', 'or', 'Driver', 'license', 'number', 'or', 'identification', 'card', 'number', 'C', 'Account', 'number', 'credit', 'card', 'number', 'debit', 'card', 'number', 'security', 'code', 'access', 'code', 'or', 'password', 'of', 'an', 'individual', 's', 'financial', 'account', 'b', 'The', 'term', 'does', 'not', 'include', 'the', 'following', '1', 'The', 'last', 'four', '4', 'digits', 'of', 'an', 'individual', 's', 'Social', 'Security', 'number', '2', 'Publicly', 'available', 'information', 'that', 'is', 'lawfully', 'made', 'available', 'to', 'the', 'public', 'from', 'records', 'of', 'a', 'federal', 'agency', 'or', 'local', 'agency', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-4', 'State', 'agency', 'Sec', '4', 'As', 'used', 'in', 'this', 'section', 'state', 'agency', 'has', 'the', 'meaning', 'set', 'forth', 'in', 'IC', '4-1-10-2', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-5', 'Disclosures', 'of', 'security', 'breach', 'Sec', '5', 'Any', 'state', 'agency', 'that', 'owns', 'or', 'licenses', 'computerized', 'data', 'that', 'includes', 'personal', 'information', 'shall', 'disclose', 'a', 'breach', 'of', 'the', 'security', 'of', 'the', 'system', 'following', 'discovery', 'or', 'notification', 'of', 'the', 'breach', 'to', 'any', 'state', 'resident', 'whose', 'unencrypted', 'personal', 'information', 'was', 'or', 'is', 'reasonably', 'believed', 'to', 'have', 'been', 'acquired', 'by', 'an', 'unauthorized', 'person', 'b', 'The', 'disclosure', 'of', 'a', 'breach', 'of', 'the', 'security', 'of', 'the', 'system', 'shall', 'be', 'made', '1', 'without', 'unreasonable', 'delay', 'and', '2', 'consistent', 'with', 'A', 'the', 'legitimate', 'needs', 'of', 'law', 'enforcement', 'as', 'described', 'in', 'section', '7', 'of', 'this', 'chapter', 'and', 'B', 'any', 'measures', 'necessary', 'to', '1', 'determine', 'the', 'scope', 'of', 'the', 'breach', 'and', 'ii', 'restore', 'the', 'reasonable', 'integrity', 'of', 'the', 'data', 'system', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-6', 'Notification', 'to', 'a', 'third', 'party', 'owner', 'of', 'security', 'breach', 'Sec', '6', 'a', 'This', 'section', 'applies', 'to', 'a', 'state', 'agency', 'that', 'maintains', 'computerized', 'data', 'that', 'includes', 'personal', 'information', 'that', 'the', 'state', 'agency', 'does', 'not', 'own', 'b', 'If', 'personal', 'information', 'was', 'or', 'is', 'reasonably', 'believed', 'to', 'have', 'been', 'acquired', 'by', 'an', 'unauthorized', 'person', 'the', 'state', 'agency', 'shall', 'notify', 'the', 'owner', 'or', 'licensee', 'of', 'the', 'information', 'of', 'a', 'breach', 'of', 'the', 'security', 'of', 'the', 'system', 'immediately', 'following', 'discovery', 'The', 'agency', 'shall', 'provide', 'the', 'notice', 'to', 'state', 'residents', 'as', 'required', 'under', 'section', '5', 'of', 'this', 'chapter', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-7', 'Time', 'requirement', 'for', 'notification', 'Sec', '7', 'The', 'notification', 'required', 'by', 'this', 'chapter', '1', 'may', 'be', 'delayed', 'if', 'a', 'law', 'enforcement', 'agency', 'determines', 'that', 'the', 'notification', 'will', 'impede', 'a', 'criminal', 'investigation', 'and', '2', 'shall', 'be', 'made', 'after', 'the', 'law', 'enforcement', 'agency', 'determines', 'that', 'it', 'will', 'not', 'compromise', 'the', 'investigation', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-8', 'Form', 'of', 'notification', 'Sec', '8', 'Except', 'as', 'provided', 'in', 'section', '9', 'of', 'this', 'chapter', 'a', 'state', 'agency', 'may', 'provide', 'the', 'notice', 'required', 'under', 'this', 'chapter', '1', 'in', 'writing', 'or', '2', 'by', 'electronic', 'mail', 'if', 'the', 'individual', 'has', 'provided', 'the', 'state', 'agency', 'with', 'the', 'individual', 's', 'electronic', 'mail', 'address', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-9', 'Alternate', 'form', 'of', 'notification', 'Sec', '9', 'a', 'This', 'section', 'applies', 'if', 'a', 'state', 'agency', 'demonstrates', 'that', '1', 'the', 'cost', 'of', 'providing', 'the', 'notice', 'required', 'under', 'this', 'chapter', 'is', 'at', 'least', 'two', 'hundred', 'fifty', 'thousand', 'dollars', '250,000', '2', 'the', 'number', 'of', 'persons', 'to', 'be', 'notified', 'is', 'at', 'least', 'five', 'hundred', 'thousand', '500,000', 'or', '3', 'the', 'agency', 'does', 'not', 'have', 'sufficient', 'contact', 'information', 'the', 'state', 'agency', 'may', 'use', 'an', 'alternate', 'form', 'of', 'notice', 'set', 'forth', 'in', 'subsection', 'b', 'A', 'state', 'agency', 'may', 'provide', 'the', 'following', 'alternate', 'forms', 'of', 'notice', 'if', 'authorized', 'by', 'subsection', 'a', '1', 'Conspicuous', 'posting', 'of', 'the', 'notice', 'on', 'the', 'state', 'agency', 's', 'web', 'site', 'if', 'the', 'state', 'agency', 'maintains', 'a', 'web', 'site', '2', 'Notification', 'to', 'major', 'statewide', 'media', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'IC', '4-1-11-10', 'Notification', 'to', 'consumer', 'reporting', 'agencies', 'Sec', '10', 'If', 'a', 'state', 'agency', 'is', 'required', 'to', 'provide', 'notice', 'under', 'er', 'this', 'chapter', 'to', 'more', 'than', 'one', 'thousand', '1,000', 'individuals', 'the', 'state', 'agency', 'shall', 'notify', 'without', 'unreasonable', 'delay', 'all', 'consumer', 'reporting', 'agencies', 'as', 'defined', 'in', '15', 'U.S.C.', '1681a', 'of', 'the', 'distribution', 'and', 'content', 'of', 'the', 'notice', 'As', 'added', 'by', 'P.L.91-2005', 'SEC.2', 'Amended', 'by', 'P.L.1-2006', 'SEC.7', 'Indiana', 'Code', '2016', 'IC', '24-4-9', 'ARTICLE', 'BREACH', '4.9', 'DISCLOSURE', 'OF', 'SECURITY', 'IC', '24-4-9-1', 'Chapter', '1', 'Application', 'IC', '24-4-9-1-1', 'Applicability', 'Sec', '1', 'This', 'article', 'does', 'not', 'apply', 'to', '1', 'a', 'state', 'agency', 'as', 'defined', 'in', 'IC', '4-1-10-2', 'or', '2', 'the', 'judicial', 'or', 'legislative', 'department']
```

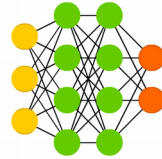
A mostly complete chart of

Neural Networks

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- Backfed Input Cell
- Input Cell
- △ Noisy Input Cell
- Hidden Cell
- Probabilistic Hidden Cell
- △ Spiking Hidden Cell
- Output Cell
- Match Input Output Cell
- Recurrent Cell
- Memory Cell
- △ Different Memory Cell
- Kernel
- Convolution or Pool

Deep Feed Forward (DFF)



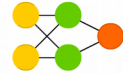
Perceptron (P)



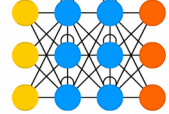
Feed Forward (FF)



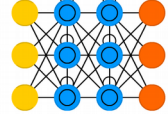
Radial Basis Network (RBF)



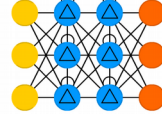
Recurrent Neural Network (RNN)



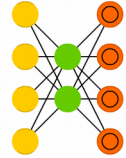
Long / Short Term Memory (LSTM)



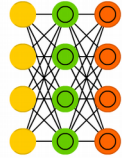
Gated Recurrent Unit (GRU)



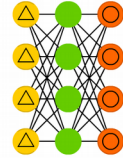
Auto Encoder (AE)



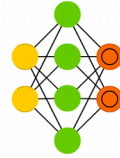
Variational AE (VAE)



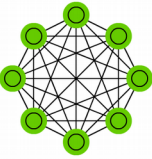
Denosing AE (DAE)



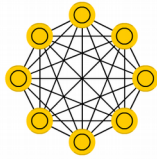
Sparse AE (SAE)



Markov Chain (MC)



Hopfield Network (HN)



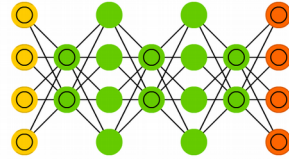
Boltzmann Machine (BM)



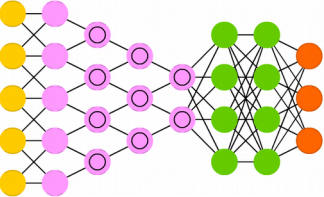
Restricted BM (RBM)



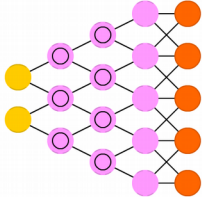
Deep Belief Network (DBN)



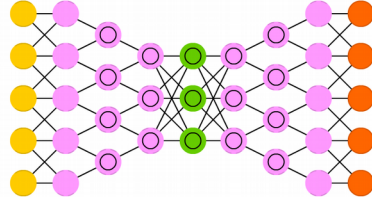
Deep Convolutional Network (DCN)



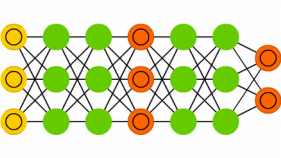
Deconvolutional Network (DN)



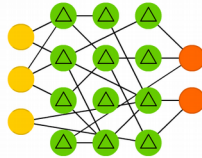
Deep Convolutional Inverse Graphics Network (DCIGN)



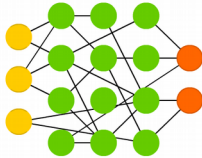
Generative Adversarial Network (GAN)



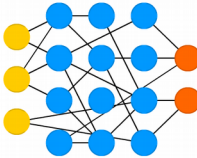
Liquid State Machine (LSM)



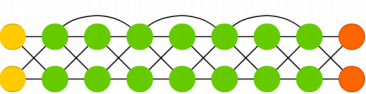
Extreme Learning Machine (ELM)



Echo State Network (ESN)



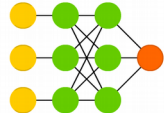
Deep Residual Network (DRN)



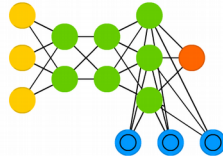
Kohonen Network (KN)



Support Vector Machine (SVM)



Neural Turing Machine (NTM)



Fabio. M. Soares, Rodrigo Nunes

Neural Network Programming with Python

Build smarter programs with the power of neural networks and the simplicity of Python



Packt


```
1 import numpy as np
2 import pandas as pd
3 from lxml import html
4
```

```
5 from passage.models import RNN
6 from passage.updates import Adadelta
7 from passage.layers import Embedding, GatedRecurrent, Dense
8 from passage.preprocessing import Tokenizer
```

RNN imports

```
9
10 # download data at kaggle.com/c/word2vec-nlp-tutorial/data
11
```

```
12 def clean(texts):
13     return [html.fromstring(text).text_content().lower().strip() for text in texts]
```

preprocessing

```
14
15 if __name__ == "__main__":
```

```
16     tr_data = pd.read_csv('labeledTrainData.tsv', delimiter='\t')
17     trX = clean(tr_data['review'].values)
18     trY = tr_data['sentiment'].values
```

load training data

```
19
20     tokenizer = Tokenizer(min_df=10, max_features=100000)
21     trX = tokenizer.fit_transform(trX)
```

tokenize data

```
22
23     layers = [
24         Embedding(size=256, n_features=tokenizer.n_features),
25         GatedRecurrent(size=512, seq_output=False, p_drop=0.75),
26         Dense(size=1, activation='sigmoid')
27     ]
```

configure model

```
28
29     model = RNN(layers=layers, cost='bce', updater=Adadelta(lr=0.5))
30     model.fit(trX, trY, n_epochs=10)
```

make and train model

```
31
32     te_data = pd.read_csv('testData.tsv', delimiter='\t')
33     ids = te_data['id'].values
34     teX = clean(te_data['review'].values)
```

load test data

```
35     teX = tokenizer.transform(teX)
36     pr_teX = model.predict(teX).flatten()
```

predict on test data

```
37
38     pd.DataFrame(np.asarray([ids, pr_teX]).T).to_csv('submission.csv', index=False, header=["id", "sentiment"])
39
```

An abstract graphic on the left side of the slide, featuring a large, light grey shape that resembles a stylized letter 'K' or a similar symbol. This shape is set against a background of dark blue and medium blue curved shapes, creating a layered, geometric effect.

Questions?

CONTACT:
ron@TexasComputerLaw.com