Projects
Dr. Jarret Grout

The Data Incubator

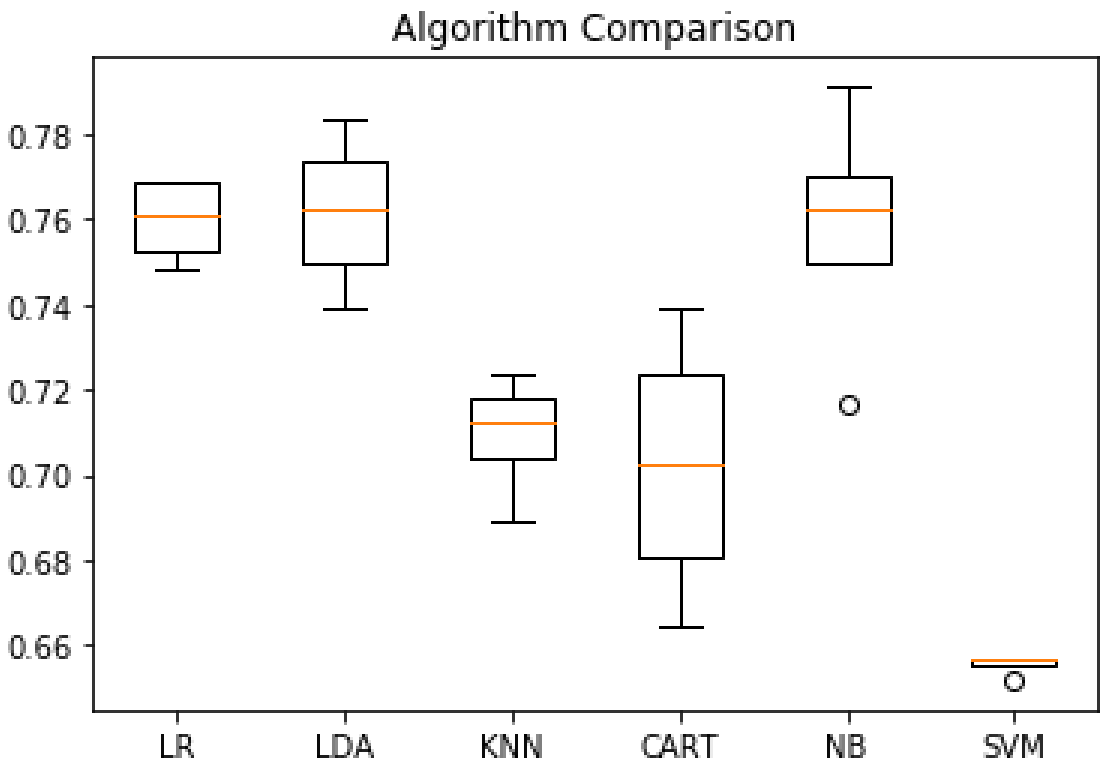
July 14, 2020

Diabetes prediction

Based on data of the Pima Native Americans, can diabetes be predicted?

- Running multiple machine learning algorithms to determine potential benefit
- Running a grid search, sequential model for a deep learning calculation, including
  - Activation and initialization
  - Batch size and epochs
  - Learn and dropout rates
  - Neuron dimensions
- Improvement of accuracy from 73% to 78.3%

  (It's humans => spread)
- Provide a baseline that people can measure themselves against
- Identify which factors (or combination of factors) is most likely to promote diabetes



Object Detection with OpenCV

There are too many people in the water. This app will return the number in the water and conditions.

- Scrape images from internet surfcams
- Optical recognition of people and waves
- Returns:
  - Location name
  - Number of people in the water
  - Wave presence?
  - Chop?
  - Optional image

Returns:
Torquay Surf Club: 3WC

Image:https://www.facebook.com/swellnet/photos/a.407681299928/10154497340394929/?type=1&theater

Object Detection with OpenCV

Too many visitors from Melbourne during lockdown. An app to tag people at tourist locations, and help identify tourists.

- Images taken by citizens
- Optical recognition of license plates, GPS location, time, date
- Uploads:
  - License plate number
  - Confidence (<95% = fail)
  - Location
  - Time
  - Date
  - Photographer identifier
  - Compressed image
- Analysed for plates from lockdown regions

Uploads: ZWS122
0.96
Latitude:38° 18.451’ S
144° 22.584' E
11:00
2020:05:02
123456789
Compressed Image

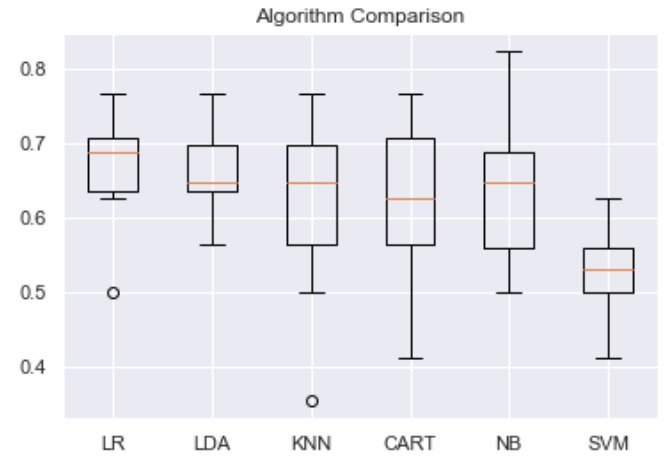
Image: https://cdn.newsapi.com.au/image/v1/e88922d2ba0b270abd02c7f548155d33?width=1024

Neuroplasticity for Vertigo / Tinnitus Healing

Can the ability to heal vertigo and tinnitus with neuroplasticity be predicted?

- What factors contribute to a higher likelihood of healing?
- What factors prevent healing?
- Where can improvements in the delivery of the program be realized?
- Can programs be tailored to the specific needs of participants?

- Significant room for growth in this now million dollar company



	Conditions	Therapies	Healing	Recovery	Initial Score	Emotional	Functional	Positional	AfterHealing	AfterRecovery	PracFreq	Under16
Conditions	1	0.40752	-0.198358	-0.167834	0.258724	0.0614187	0.20224	0.375381	0.0532043	0.0432293	0.0835737	0.00227599
Therapies	0.40752	1	0.0380514	0.0406417	0.442971	0.217344	0.345328	0.525066	0.0948901	0.0958233	-0.0871597	-0.146252
Healing	-0.198358	0.0380514	1	0.890371	0.027469	0.0109202	0.0187129	0.0120332	0.450873	0.429525	0.134422	0.142669
Recovery	-0.167834	0.0406417	0.890371	1	0.0343593	0.0645832	0.00394923	-0.00726279	0.397807	0.403531	0.123552	0.0835387
Initial Score	0.258724	0.442971	0.027469	0.0343593	1	0.753705	0.919832	0.825583	0.130368	0.153394	-0.0199116	-0.249798
Emotional	0.0614187	0.217344	0.0109202	0.0645832	0.753705	1	0.587876	0.335877	0.141308	0.193749	-0.0817963	-0.0623602
Functional	0.20224	0.345328	0.0187129	0.00394923	0.919832	0.587876	1	0.707645	0.117206	0.12783	-0.0294299	-0.306237
Positional	0.375381	0.525066	0.0120332	-0.00726279	0.825583	0.335877	0.707645	1	0.0550794	0.0538845	0.0436413	-0.263877
AfterHealing	0.0532043	0.0948901	0.450873	0.397807	0.130368	0.141308	0.117206	0.0550794	1	0.936042	0.0644834	0.250556
AfterRecovery	0.0432293	0.0958233	0.429525	0.403531	0.153394	0.193749	0.12783	0.0538845	0.936042	1	0.0522375	0.225104
PracFreq	0.0835737	-0.0871597	0.134422	0.123552	-0.0199116	-0.0817963	-0.0294299	0.0436413	0.0644834	0.0522375	1	0.22396
Under16	0.00227599	-0.146252	0.142669	0.0835387	-0.249798	-0.0623602	-0.306237	-0.263877	0.250556	0.225104	0.22396	1