

# // Survey on our interests / expertises

Name	Tools being used	Tools which could be used in the context of your ongoing projects
Nuno Castro	TMVA (ANN, BDT)	Machine learning: TMVA (k-fold cross-validation), Keras, TensorFlow, Theano, SK-Learn, GPU training, CNNs  Data handling: GlusterFS
Giles Strong	Theano, Keras (classification & regression), SK-Learn (pre-processing, k-fold CV, PCA), XGBoost (Classification), Pandas	Tensorflow GPU training Distributed training RNNs & CNNs
Juan Pedro Araque	TMVA (in the past for BDT and NNs)	NNs, study which type can produce better results TensorFlow Open to any other tool proposed
António Esteves	Theano, Keras	Theano, Keras, TensorFlow, CNNs and RNNs, acceleration of computation with GPUs and FPGAs
Alexandre Lindote	NN, computation with GPUs	BDT, SVM, kNN, feature detection algorithms (supervised and unsupervised)
Tiago Vale	TensorFlow	Neural Nets, Random Forests

Lúís Silva	ANN, Scikit Learn (preprocessing, k-fold, CV and supervised and unsupervised techniques), numpy, pandas, Octave/Matlab.	TensorFlow, Theano, Keras, working with GPUs.
Celso Franco	Dynamic Neural Network with backpropagation algorithm, Recurrent Neural Network, SOM in Matlab and Octave, SVM	Theano, Keras, TensorFlow

[https://docs.google.com/document/d/1Cd0vLKFSb886OuMb583Vo9YPdS\\_G\\_8JL9q8N0HHPaN4/edit](https://docs.google.com/document/d/1Cd0vLKFSb886OuMb583Vo9YPdS_G_8JL9q8N0HHPaN4/edit)

- Please continue to update the survey – it can help us to identify experts and use cases when needed



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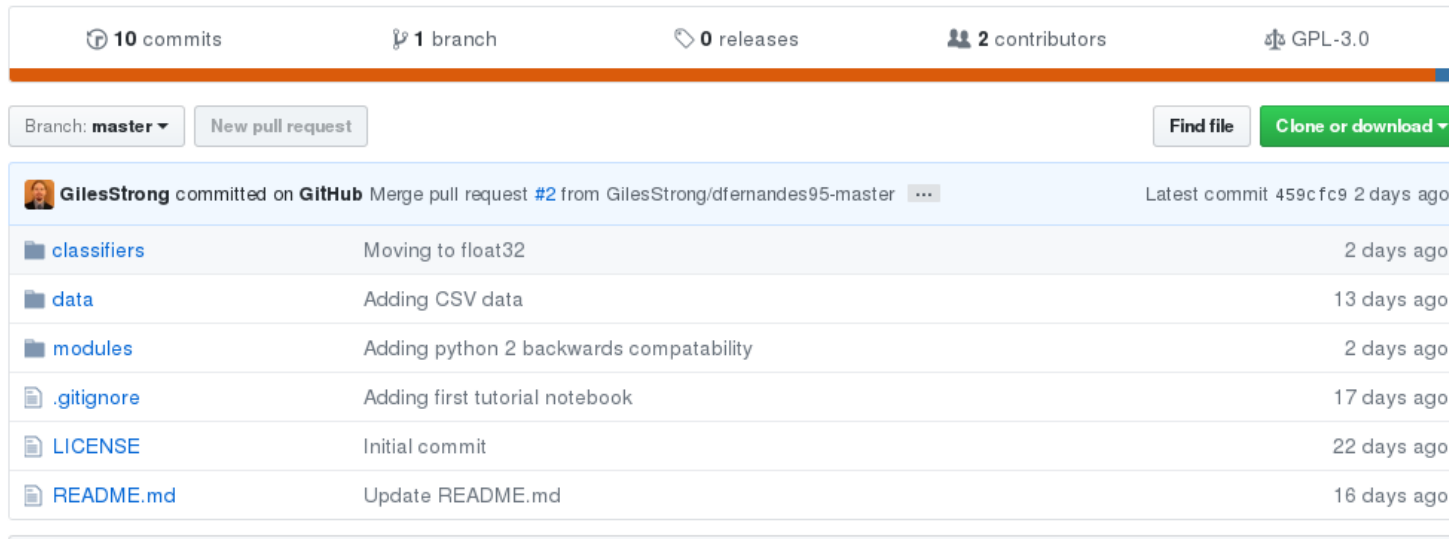
- The survey shows that:
  - We have already some expertise on the field  
(but we clearly need to consolidate it – need for training!)
  - Some expertise on modern tools such as keras and scikit-learn
  - Some expertise on the use of GPUs
- Clearly we have lots of common interests
  - Deep neural networks, not surprisingly, emerge as one of the main common points of interest
- Next steps:
  - Start a training program to consolidate our know-how (ideas? Proposals?)
  - Identify ML expertise in other research groups in Portugal  
(as discussed last meeting)



# // Today's meeting

- Discussion on the proposal of a School & Workshop on Data Science in (Astro)Particle Physics and the bridge to industry → Lorenzo
- Tutorial: some modern machine learning tools in HEP → Giles  
[https://github.com/GilesStrong/ML\\_Tutorials](https://github.com/GilesStrong/ML_Tutorials)

Short introduction to machine learning with a focus on high-energy physics



10 commits    1 branch    0 releases    2 contributors    GPL-3.0

Branch: **master**    New pull request    Find file    Clone or download

**GilesStrong** committed on **GitHub** Merge pull request #2 from GilesStrong/dfernandes95-master    Latest commit 459cfc9 2 days ago

classifiers	Moving to float32	2 days ago
data	Adding CSV data	13 days ago
modules	Adding python 2 backwards compatability	2 days ago
.gitignore	Adding first tutorial notebook	17 days ago
LICENSE	Initial commit	22 days ago
README.md	Update README.md	16 days ago



## // Next meetings

- There is probably no point in having a meeting in August
  - unless you really want it...
- Maybe not so easy to find a suitable slot in September
  - shall we restart with a meeting early October
  - Doodle poll to be circulated in September to fix a suitable week day and time to be used also for the future
  - Resume monthly meetings afterwards
  - As always, please volunteer to the “journal club”

