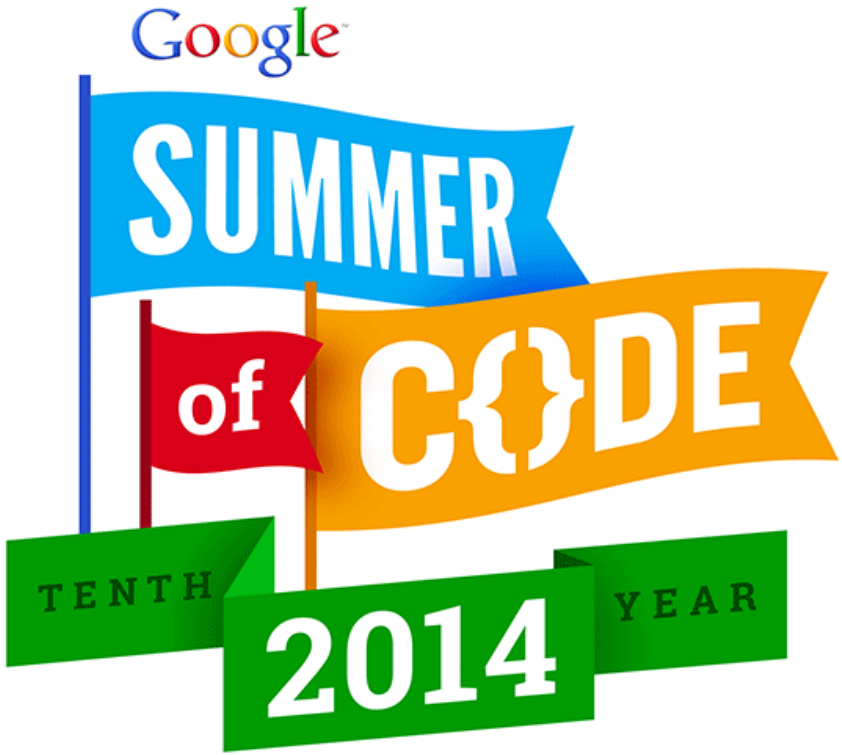
Google Summer of Code

- Full-time summer job for students.
- 5000$ stipend.
- Open-source contribution.
- Shogun: 29 students since 2011.



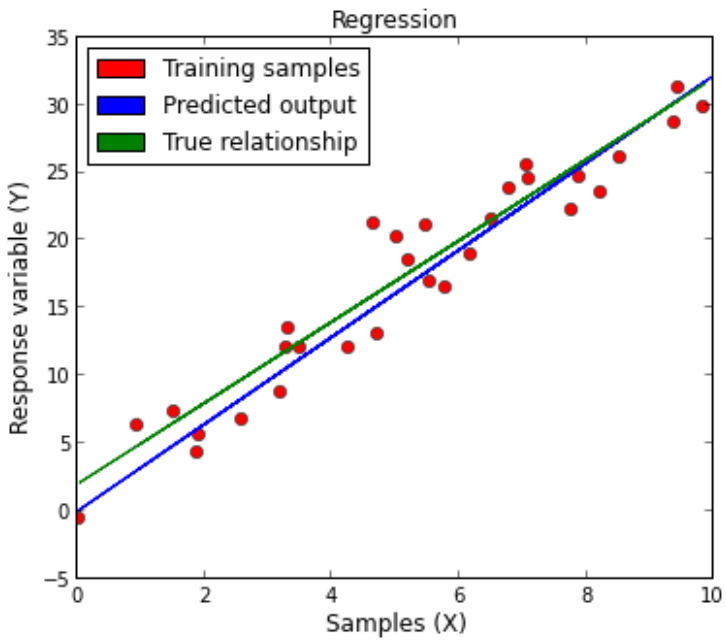
Ongoing projects already introduced

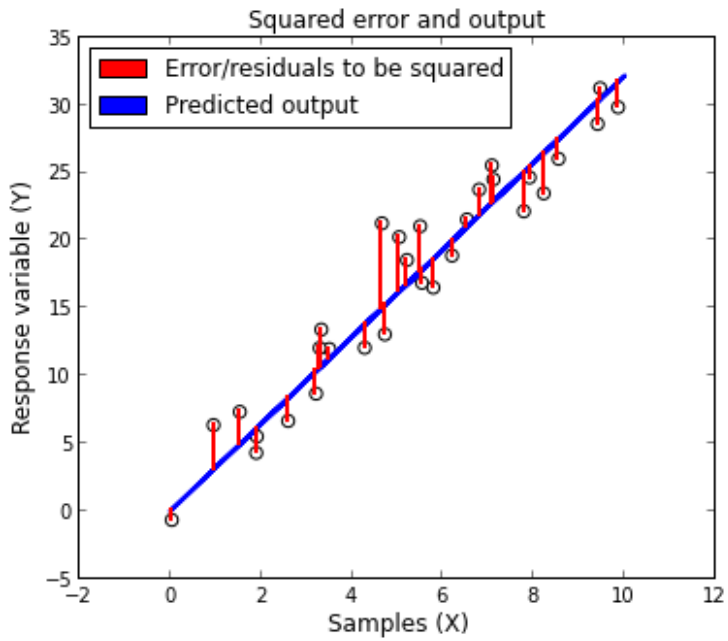
- Variational learning for recommendations with big data.
  - Wu Lin.
- Testing and measuring variable interactions with kernels.
  - Soumyajit De.

Shogun in education

Saurabh Mahindre

- Enhancing both visibility and usability.
- Web demos.
- Notebooks (multiclass, regression, MKL, and more!).

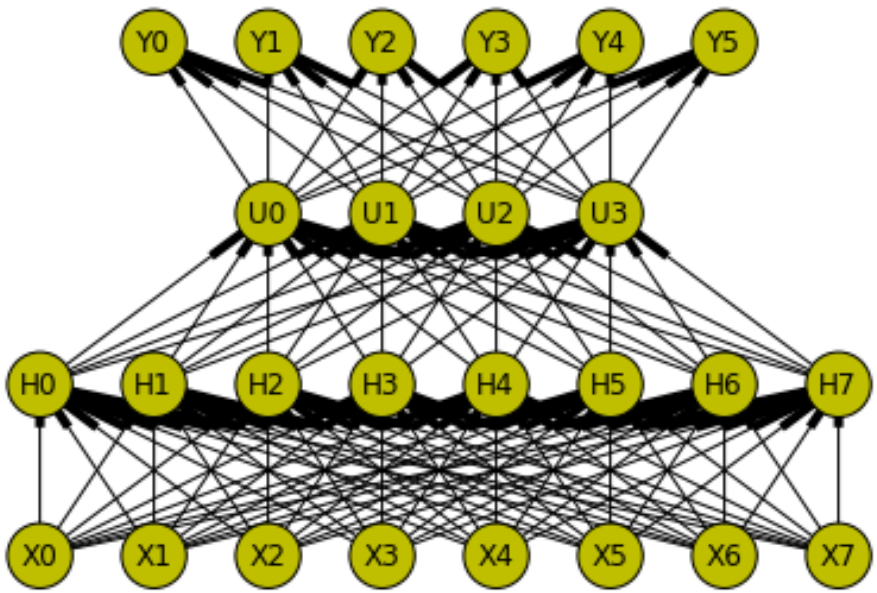




Essential deep learning modules

Khaled Nasr

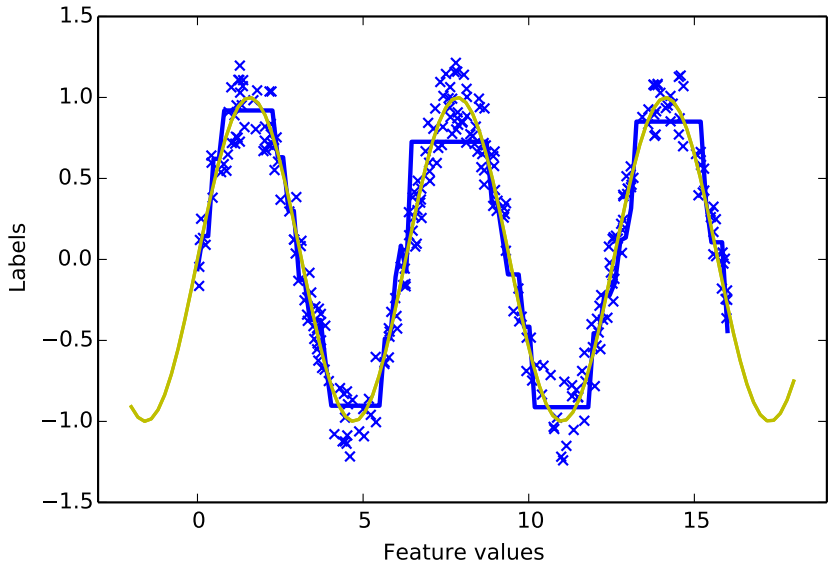
- Incorporation of neural networks to Shogun.
- Boltzmann machines, autoencoders, convolutional NNs, depp belief networks, ...
- GPU matrix operations with ViennaCL (part of the linear algebra library).

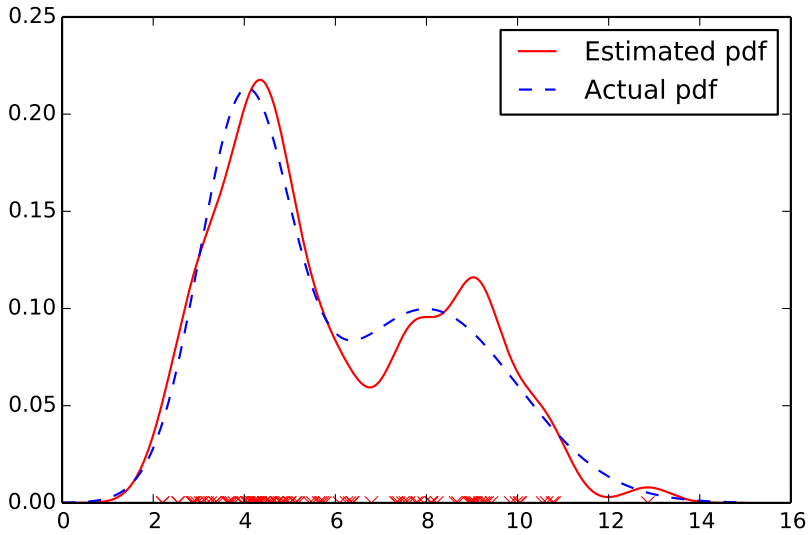


Fundamental ML algorithms

Parijat Mazumdar

- Decision trees.
  - Classification and regression (CAR).
  - Pruning.
  - Tested on "real-world" data.
- Random forests with randomised CAR trees.
- KD-tree and ball tree.
- Kernel density estimation.

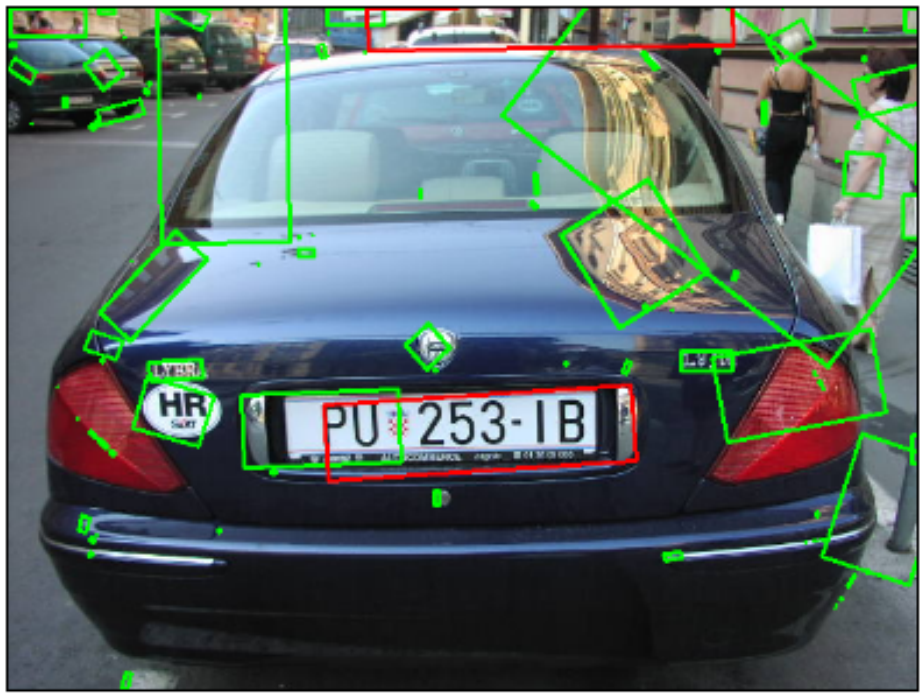




OpenCV integration and CV applications

Abhijeet Kislay

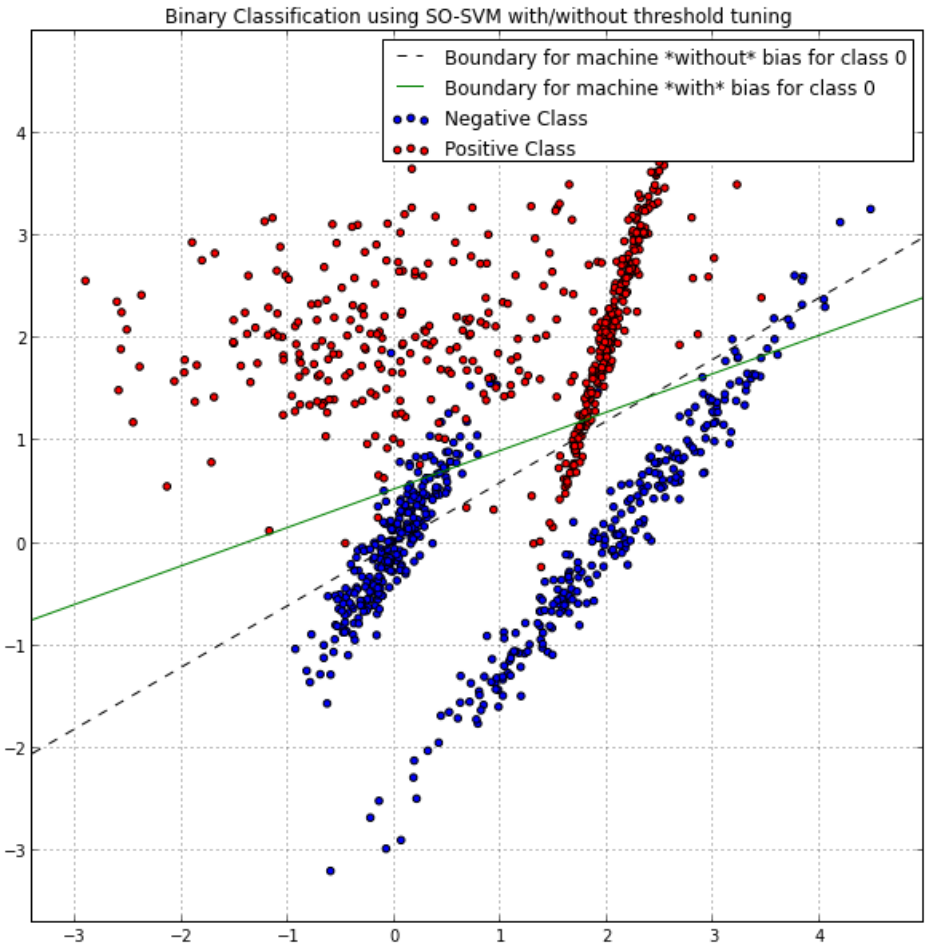
- Communication between Shogun and OpenCV.
  - `SGMatrix` $\rightleftharpoons$ `cv::Mat`.
- Fisher faces.
- Automatic number plate recognition based on optical character recognition.



Multi-label classification

Abinash Panda

- Multi-label extension to the structured output (SO) framework.
- Hashed and non-hashed variants.
- Hierarchical multi-label classification (predicting taxonomies).
- Performance optimisations to the SO framework.



Structured prediction with approximate inference

Jiaolong Xu

- Approximate inference for factor graph models:
  - Graph cuts.
  - MPLP (LP relaxation).
  - Tree max-product.
- Extending Shogun's interface to MOSEK.