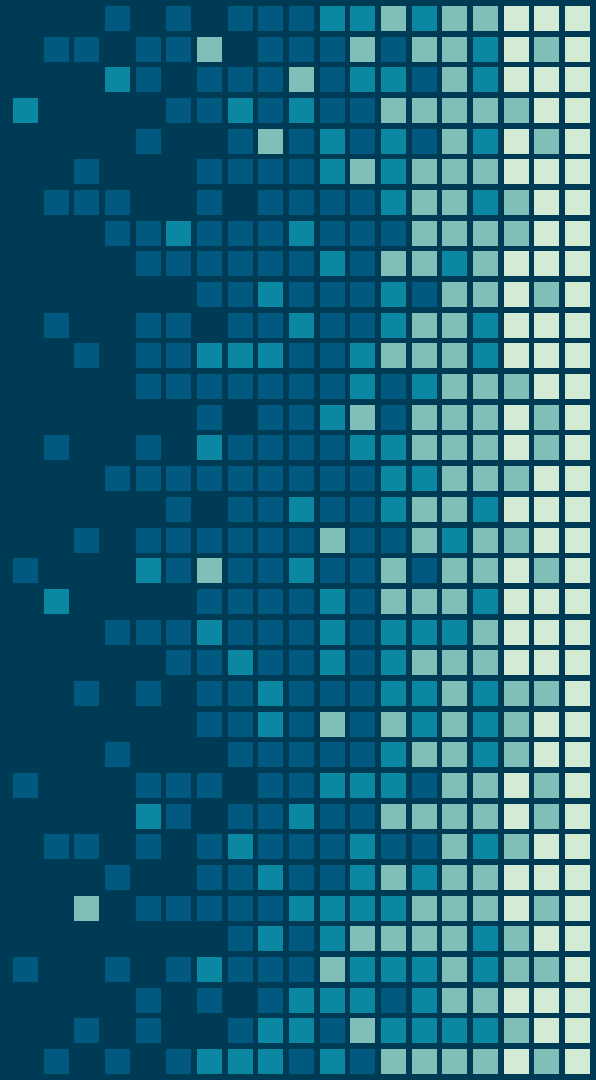




# House Prices:

## Advanced Regression Techniques

*by Iurie Gajev*



# Components of the project:

- ❖ Estimate the sale price of properties based on their "fixed" characteristics (sqft, Neighborhood, Type of dwelling)
  - Models:
    - Linear Regression
    - Lasso Regularization
    - Ridge Regularization
    - ElasticNet regularization
  
- ❖ Estimate the value of possible changes and renovations to properties from the variation in sale price not explained by the fixed characteristics (Overall Quality, Type of material, Heating)
  - Models:
    - Linear Regression
    - Lasso Regularization
    - Ridge Regularization
    - ElasticNet regularization



## The content of the dataset:

- ❖ describes the sale of individual residential property in Ames, Iowa from 2006 to 2010
- ❖ contains **1460** observations
- ❖ includes **80** variables
  - **20** continuous variables (*various area dimensions*)
  - **14** discrete variables (*number of items occurring within the house*)
  - categorical variables:
    - **23** nominal (*various types of dwellings, garages, materials*)
    - **23** ordinal (*various items within the property*)



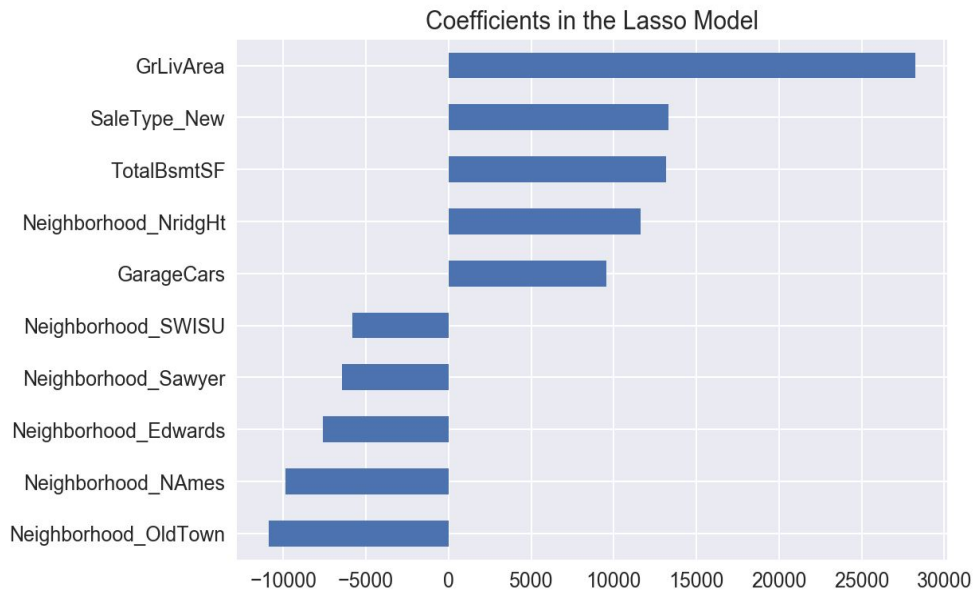
# Key Factors that drive the home prices

R<sup>2</sup> score: 0.843541098134

RMSE: 31538.42

GrLivArea	28238.305230
SaleType_New	13294.515277
Total BsmtSF	13155.380741
Neighborhood_NridgHt	11633.307339
Garage Cars	9544.679110

Neighborhood_SWISU	-5832.882828
Neighborhood_Sawyer	-6440.055716
Neighborhood_Edwards	-7625.612457
Neighborhood_NAmes	-9859.006806
Neighborhood_OldTown	-10877.966140



# Value of possible changes and renovations to properties

R^2 score:0.208999632411  
RMSE: 27995.6540099

Functional_Typ	12139.841248
KitchenQual_Ex	8892.624828
ExterQual_Ex	7819.114983
OverallQual	7751.637843
Exterior1st_BrkFace	7551.939808
RoofMatl_CompShg	-4425.334206
KitchenQual_TA	-4458.237228
ExterQual_Gd	-5363.022951
BsmtCond_Fa	-5435.544904
BsmtQual_Gd	-6829.446539

