1 Appendix

1.1 Appendix A

Table 1 Variable Description

Transformed	Feature	Description
Yes	addr_state	The state provided by the borrower in the loan application
No	annual_inc	The self-reported annual income provided by the borrower during registration.
Yes	application_type	Indicates whether the loan is an individual application or a joint application with two co-borrowers
No	dti	A ratio calculated using the borrower's total monthly debt payments on the total debt obligations, excluding mortgage and the requested LC loan, divided by the borrower's self-reported monthly income.
No	earliest_cr_line	The month the borrower's earliest reported credit line was opened
Yes	emp_length	Employment length in years. Possible values are between 0 and 10 where 0 means less than one year and 10 means ten or more years.
Yes	emp_title	The job title supplied by the Borrower when applying for the loan.*
Yes	fico_range_high	The upper boundary range the borrower's FICO loan origination belongs to.
Yes	fico_range_low	The lower boundary range the borrower's FICO loan origination belongs to.
Yes	grade	LC assigned loan grade
Yes	home_ownership	The home ownership status provided by the borrower during registration or obtained from the credit report. Our values are: RENT, OWN, MORTGAGE, OTHER
No	id	A unique LC assigned ID for the loan listing.
Yes	initial_list_status	The initial listing status of the loan. Possible values are – W, F
No	installment	The monthly payment owed by the borrower if the loan originates.
	int_rate	Interest Rate on the loan
No	issue_d	The month which the loan was funded
No	loan_amnt	The listed amount of the loan applied for by the borrower. If at some point in time, the credit department reduces the loan amount, then it will be reflected in this value.
Yes	loan_status	Current status of the loan
No	mo_sin_old_il_acct	Months since oldest bank installment account opened
No	mo_sin_old_rev_tl_op	Months since oldest revolving account opened
No	mort_acc	Number of mortgage accounts.
No	open_acc	The number of open credit lines in the borrower's credit file.

No	policy_code	publicly available policy_code=1 new products not publicly available policy_code=2
No	pub_rec	Number of derogatory public records
No	pub_rec_bankruptcies	Number of public record bankruptcies
Yes	purpose	A category provided by the borrower for the loan request.
No	revol_bal	Total credit revolving balance
No	revol_util	Revolving line utilization rate, or the amount of credit the borrower is using relative to all available revolving credit.
Yes	sub_grade	LC assigned loan subgrade
No	term	The number of payments on the loan. Values are in months and can be either 36 or 60.
No	title	The loan title provided by the borrower
No	total_acc	The total number of credit lines currently in the borrower's credit file
No, excluded	url	URL for the LC page with listing data.
Yes	verification_status	Indicates if income was verified by LC, not verified, or if the income source was verified
Yes	zip_code	The first 3 numbers of the zip code provided by the borrower in the loan application.

Source: (Lending Club, 2019)

1.2 Appendix B

Figure 1 Small Decision Tree - Random Forest
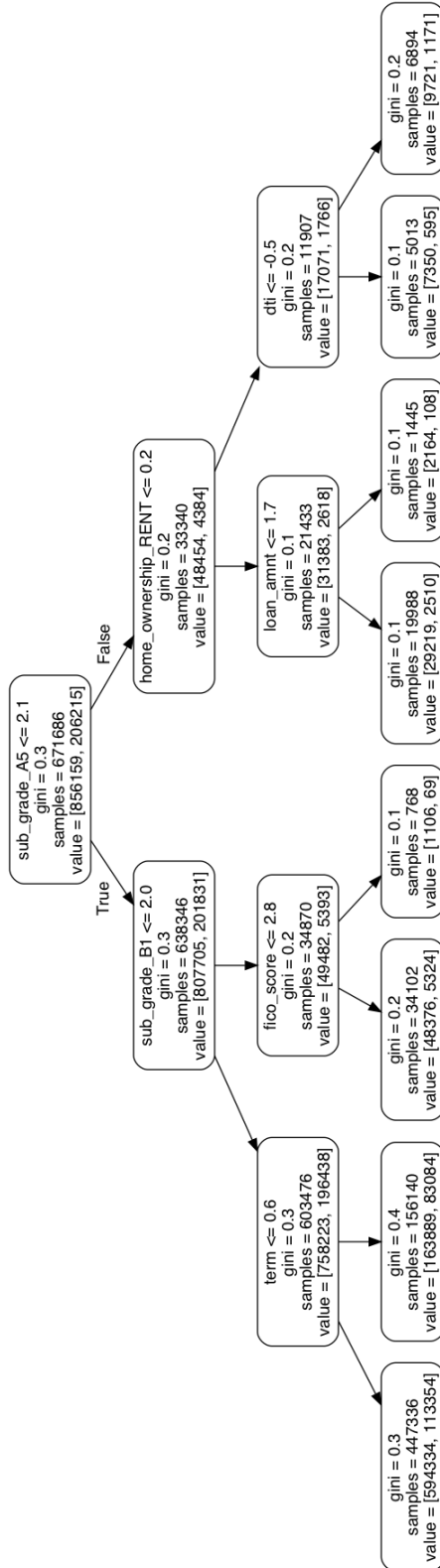
Source: own

1.3 Appendix C

Table 2 Mean cross-validated AUROC score of the best model
Source: own

	mean_fit_time	std_fit_time	mean_score_time	std_score_time	param_model__alpha	param_model__p	params	split0_test_score	split1_test_score	split2_test_score	mean_test_score	std_test_score	rank_test_score
0	61.169369	2.342201	1.248937	0.577687	1e-05	l1	{'model__alpha': 1e-05, 'model__penalty': 'l1'}	0.704502	0.699550	0.677402	0.693818	0.011782	4
1	35.220870	11.072968	1.398240	1.111600	1e-05	l2	{'model__alpha': 1e-05, 'model__penalty': 'l2'}	0.706864	0.699004	0.676181	0.694017	0.013013	3
2	12.490705	2.904569	0.325992	0.058549	0.1	l1	{'model__alpha': 0.1, 'model__penalty': 'l1'}	0.500000	0.500000	0.500000	0.500000	0.000000	5
3	6.843454	0.297149	0.423599	0.169512	0.1	l2	{'model__alpha': 0.1, 'model__penalty': 'l2'}	0.732133	0.719773	0.690160	0.714022	0.017611	1
4	11.103602	1.085517	0.897483	0.185883	100	l1	{'model__alpha': 100, 'model__penalty': 'l1'}	0.500000	0.500000	0.500000	0.500000	0.000000	5
5	9.761820	2.193582	0.592456	0.305512	100	l2	{'model__alpha': 100, 'model__penalty': 'l2'}	0.726649	0.714085	0.668761	0.703165	0.024862	2