## Random Trees Implementation

## Model Achieved with an error margin of 0.02%

> model_1 <- randomForest() > model_1	as.factor(Category) ~ .	, data = trainir	g_set, importance = TR	RUE)							•
Call:											
randomForest(formula = as Type of ran	dom forest: classificat	data = training_ tion	set, importance	= TRUE)							
No. of variables tried at	r of trees: 500 each split: 6										
OOB estimate of e	rror rate: 1.52%										
	vclina conditionina exe	ercise dancing fi	shing and hunting home	activities home re	pair inacti	rity guiet/light lawn an	d garden miscellane	ous music i	playing occup	ation	
bicycling	363	3 0	0	0	0	0	0	0	0	0	
conditioning exercise	0	1149 0	3	ž	o o	ŏ	o o	o o	o o	Ů.	
dancing	0	1 480	10	õ	1	ŏ	0	o o	ó	ů.	
fishing and hunting	0	0 0	489	5	0	Ö.	2	0	0	0	
home activities	0	0 0	2	962	0	Ö.	0	i	0	0	
home repair	0	0 3	ō	0	709	ò	3	0	0	0	
inactivity quiet/light	0	0 0	0	i	5	107	3	10	0	1	
lawn and garden	0	0 0	0	0	7	1	763	0	4	0	
miscellaneous	0	0 0	0	0	2	ō	15	483	5	0	
music playing	0	0 0	o o	0	2	Ö.	15	0	358	2	
occupation	ō	0 0	Ö	ō	ō	Ö	0	Ō	0	1642	
religious activities	0	0 0	0	0	0	0	0	0	0	7	
running	0	0 0	0	0	0	0	0	0	0	8	
self care	0	0 0	0	0	0	0	0	0	0	5	
sports	0	0 0	0	0	0	0	0	0	0	0	
transportation	0	0 0	0	0	0	0	0	0	0	0	
volunteer activities	0	0 0	0	0	0	0	0	0	0	0	
walking	0	0 0	0	0	0	0	0	0	0	1	
water activities	0	0 0	0	0	0	0	0	0	0	0	
winter activities	0	0 0	0	0	0	0	0	0	0	1	
rel	igious activities runni			lunteer activities w		activities winter acti					
bicycling	0	0 0	0 0	0	0	0	0 0.008196721				
conditioning exercise	0	0 0	0 0	0	0	0	0 0.004332756				
dancing	0	0 0	0 0	0	0	0	0 0.024390244				
fishing and hunting	0	0 0	0 0	0	0	0	0 0.014112903				
home activities	0	0 0	0 0	0	0	0	0 0.003108808				
home repair	0	0 0	0 0	0	0	0	0 0.008391608				
inactivity quiet/light	0	0 0	0 0	0	0	0	0 0.157480315				
lawn and garden miscellaneous	0	0 0	0 0	0	0	0	0 0.015483871				
	0	0 0		0		0	0 0.043564356				
music playing	0	0 0	0 0	0	0	0	0 0.050397878				
occupation religious activities	80	0 0	0 0	0	0	0	0 0.000000000				
		204 0	0 0	0	0	0	0 0.080459770				
running self care	0 4	0 58	2 0	0	0	0	0 0.03//35849				
	0	0 0 7	408 0	0	1	0	0 0.10/692308				
sports transportation	0	0 0 4	15 47	0	4	1	0 0.000415110				
unlunteer activities	0	0 0	3 4/	21	7	2	0 0.29630/463				*

> model_2 <- randomFores	t(as.factor(Category) ~	., data = tr	aining_set, ntr	ee = 500, mtr	/ = 37, importanc	e = TRUE)						^
> mode1_2												
Call:												
randomForest(formula = a	as factor(Category) ~	data - trai	ning set	ntree - 500 r	itry = 37, import	ance - TRUE	)					
Type of r	andom forest: classific	ation	ing_sec,	nerec - 300, 1	ici y - 57, Import	unce - moc	·					
Number of the	ber of trees: 500	acron										
No. of variables tried a												
no. or variables cried a	e each spire. s											
OOB estimate of	error rate: 0.02%											
Confusion matrix:												
b.	icycling conditioning e	xercise danci	ng fishing and	hunting home a	activities home r	epair inact	ivity quiet/light lawr	and garden miscell	aneous musi	c playing occ	upation	
bicvcling	366	0	ő ,	ő	0	0	0	0	0	ő	. 0	
conditioning exercise	0	1154	0	0	0	0	0	0	0	0	0	
dancing	0	0 4	92	0	0	0	0	0	0	0	0	
fishing and hunting	0	0	0	496	0	0	0	0	0	0	0	
home activities	0	0	0	0	965	0	0	0	0	0	0	
home repair	0	0	0	0	0	715	0	0	0	0	0	
inactivity quiet/light	0	0	0	0	0	0	127	0	0	0	0	
lawn and garden	0	0	0	0	0	0	0	775	0	0	0	
miscellaneous	0	0	0	0	0	0	0	0	505	0	0	
music playing	0	0	0	0	0	0	0	0	0	377	0	
occupation	0	0	0	0	0	0	0	0	0	0	1642	
religious activities	0	0	0	0	0	0	0	0	0	0	0	
running self care	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	ů.	
sports transportation	0	0	0	0	0	0	, ,	0	0	0	ů.	
volunteer activities	0	0	0	0	Ů	0	, and a	0	ő	0	0	
walking	ů.	ů.	ů.	0	ň	0	ŏ	ň	ő	0	ő	
water activities	0	0	0	0	ň	0	ň	ŏ	0	0	ő	
winter activities	Ď.	ů.	0	ů.	ň	ů.	Ď	ň	0	o o	ŏ	
ri	eligious activities run	ning self car		ortation volu	teer activities	walking wat	er activities winter a	ctivities class.err	or			
bicycling	0		0	0	0	ő	0	0 0,000000				
conditioning exercise	0	0	0 0	0	0	0	0	0 0.000000	00			
dancing	0		0 0	0	0	0	0	0 0.000000				
fishing and hunting	0	0	0 0	0	0	0	0	0 0.000000				
home activities	0		0 0	0	0	0	0	0 0.000000				
home repair	0		0 0	0	0	0	0	0 0.000000				
inactivity quiet/light	0		0 0	0	0	0	0	0 0.000000				
lawn and garden	0		0	0	0	0	0	0 0.000000				
miscellaneous	0		0 0	0	0	0	0	0 0.000000				
music playing	0		0	0	0	0	0	0 0.000000				
occupation	0		0	0	0	0	0	0 0.000000				
religious activities	87 0		0 0	0	0		0	0 0.000000				
running self care	0			0	0	0	0	0 0.000000 0 0.015384				
seit care sports	0		2409	0	0	0	0	0 0.015384				
transportation	0		) 2409	67	0	0	0	0 0.000000				
volunteer activities	0		0	1	22	0	0	0 0.000000				*

Attended   Company   Com	walking	0	0	0	0	0	0	0	0	0	0	0	
inter activities 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
religious activities running self care sports transportation volunteer activities wilking water activities wilking water activities class.error of conditioning exercise 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
icycling										0	0	0	
matring multing 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		religious activitie											
Standard				0 0									
ishing and hunting													
ome activities	dancing												
ome repair 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
mactivity quiet/light	home activities		0 0	0 0	0	0	0	0	0 0.00000000				
mactivity quiet/light	home repair		0 0	0 0	0	0	0	0	0 0.00000000				
ama and gardem	inactivity quiet/light		0 0	0 0	ō	0	0	Ď.					
	lawn and garden		0 0	0 0	Ō	0	0	Ď.					
usic playing 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						0							
Comparison						0							
eligious activities						0							
umning 0 212 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	occupation					0							
elf cáre													
ports	running												
ransportation 0 0 0 0 0 67 0 0 0 0 0 0 0 0 0 0 0 0 0	self care			64 0									
Olunter activities 0 0 0 0 1 32 0 0 0 0 0.6333393 allaling of the control of the	sports		0 0	0 2409		0	0	0	0 0,00000000				
alking 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	transportation		0 0	0 0	67	0	0	0	0 0,00000000				
alking 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	volunteer activities		0 0	0 0	1	32	0	0	0 0.03030303				
ater activities inter activities inter activities inter activities inter activities inter activities inter activities  0 0 0 0 0 0 718 0 0.00000000  11 dation_prediction, validation_setKateporyl)  21 dation_prediction  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20  51 517 0.00000000  21 dation_prediction  22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	walking		0 0		Ō		400	Ď.					
inter activities													
**vailadising_prediction** prediction** pred													
** table(validation_prediction, validation_setKategory1)**  alidation_prediction					0	0	0	0	317 0.00000000				
bicycling   150   0   0   0   0   0   0   0   0   0	> table(validation_pred	liction, validation	set\$Category1)	)									
conditioning exercise 0 528 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	validation_prediction	1 2 3	4 5 6	7 8 9	10 11 12 13	14 15 16	17 18 19	9 20					
conditioning exercise 0 528 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		150 0 0	0 0 0	0 0 0			0 0 1						
dancing fishing and hunting 0 0 205 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0 528 0	0 0 0	0 0 0	0 0 0 0		0 0 1						
fishing and hunting 0 0 0 209 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					0 0 0 0		0 0						
home activities   0   0   0   412   0   0   0   0   0   0   0   0   0					0 0 0 0		0 0						
home regair													
Inactivity uniet/light   0   0   0   0   0   0   0   0   0													
Tamana gardem							0 0 1						
miscel laneous         0         0         0         0         0         228         0	inactivity quiet/ligh	t 0 0 0					0 0 1						
music playing 0 0 0 0 0 0 0 0 0 157 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							0 0 1						
Occupation 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							0 0 0						
religious activities 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	music playing			0 0 0			0 0 1						
running	occupation	0 0 0	0 0 0	0 0 0	0 687 0 0	0 0 0	0 0 1	0					
running		0 0 0	0 0 0	0 0 0	0 0 33 0	0 0 0	0 0	0					
self care 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0							0 0						
sports         0 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0 0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>							0 0						
transportation 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
volunteer activities 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0													
walking         0 </td <td>transportation</td> <td></td>	transportation												
water activities 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	volunteer activities												
winter activities 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0								) ()					
								0					
	winter activities	0 0 0	0 0 0	0 0 0	0 0 0 0	0 0 0	0 0 1	223					
· ·	>												