

Visualization

Rachel Zhang (yz2334)

7/17/2020

Newest ROH

Load different session for various visualization.

```
#load("~/Documents/Research/MLJournalPaper/Data/Final Script/sessions/newestROH.RData")
load("~/Documents/Research/MLJournalPaper/Data/Final Script/sessions/Allcurve.RData")
```

```
texreg(list(reg[[1]], reg[[2]], reg[[3]], reg[[4]], reg[[5]], reg[[6]], reg[[7]], reg[[8]],reg[[9]],reg[[10]],reg[[11]],reg[[12]]))
```

Only plot Regression, SVR, additive pickup, and Random Forest.

```
ME4 = ME_ALL[-13, c(1,3,8,9)] #c(1,3,8,9)]
rownames(ME4) = agg
ME4melt = melt(as.matrix(ME4), varnames=c('DBA', 'Model'))
ME4melt$DBA = factor(ME4melt$DBA, levels = agg)
#           levels = c(paste0('DBA', agg)))
ME4melt$Model = factor(ME4melt$Model,
                      levels=c('apk','mpk','reg','nn','knn','wknn', 'dtree', 'rf','svr'))
```

```
plotME1 = ggplot(ME4melt, aes(x=DBA, y=value, group=Model, color=Model)) +
  geom_line(aes(color=Model), size=1)+
  geom_point(aes(color=Model), size=1)+
  scale_color_manual(values=j1)+
#  scale_color_brewer(palette="Set2")+
  xlab('DBA') + ylab('Mean Errors') +
  theme_minimal() +
  theme(legend.position = 'none') #+ylim(0,15)+
#  theme(axis.text.x = element_text(vjust=1)) #angle=45,
```

```
MAE4 = MAE_ALL[-13, c(1,3,8,9)]
rownames(MAE4) = agg
MAE4melt = melt(as.matrix(MAE4), varnames=c('DBA', 'Model'))
MAE4melt$DBA = factor(MAE4melt$DBA, levels = agg)
```

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
(Intercept)	2.00*** (0.52)	2.68*** (0.69)	3.85*** (0.78)	4.53*** (0.88)	4.83*** (0.92)	6.27*** (0.95)	6.77*** (1.09)	10.94*** (1.62)	17.48*** (1.83)	21.78*** (1.91)	27.40*** (2.04)	32.50*** (1.93)
DOWMonday	0.50 (0.52)	0.98 (0.69)	-0.13 (0.79)	0.97 (0.88)	1.72 (0.91)	1.21 (0.97)	1.98 (1.11)	7.43*** (1.63)	8.55*** (1.97)	10.41*** (2.13)	12.92*** (2.39)	12.19*** (2.52)
DOWTuesday	-0.15 (0.55)	1.04 (0.72)	-0.42 (0.81)	-1.65 (0.90)	-1.48 (0.95)	-2.40* (1.00)	-1.57 (1.14)	2.65 (1.71)	2.90 (2.06)	4.68* (2.24)	3.94 (2.53)	3.24 (2.67)
DOWWednesday	-0.52 (0.50)	0.11 (0.66)	0.66 (0.76)	-0.47 (0.85)	-0.98 (0.88)	-1.72 (0.93)	-1.62 (1.07)	1.53 (1.62)	1.76 (1.95)	2.64 (2.13)	2.93 (2.41)	2.19 (2.53)
DOWThursday	1.04* (0.49)	1.70** (0.65)	2.07** (0.74)	2.35** (0.84)	2.07* (0.88)	0.99 (0.92)	1.19 (1.05)	3.29* (1.60)	2.75 (1.93)	2.96 (2.11)	4.26 (2.38)	3.46 (2.50)
DOWFriday	1.06* (0.52)	2.80*** (0.67)	3.09*** (0.77)	3.70*** (0.87)	4.44*** (0.90)	3.40*** (0.94)	2.93** (1.08)	4.48** (1.65)	2.80 (1.98)	2.56 (2.16)	3.09 (2.45)	3.09 (2.58)
DOWSaturday	1.43** (0.50)	2.59*** (0.66)	3.27*** (0.76)	4.20*** (0.85)	4.77*** (0.88)	4.27*** (0.94)	4.10*** (1.08)	4.41** (1.64)	1.74 (1.96)	0.99 (2.14)	0.61 (2.42)	-0.60 (2.55)
ROH1	1.17*** (0.08)											
ROH2	-0.07 (0.13)	1.24*** (0.13)										
ROH3	-0.13 (0.14)	-0.12 (0.18)	1.21*** (0.14)									
ROH4	0.01 (0.14)	-0.33 (0.18)	-0.30 (0.21)	0.93*** (0.17)								
ROH5	-0.02 (0.15)	0.18 (0.21)	-0.00 (0.24)	-0.01 (0.27)	1.12*** (0.18)							
ROH6	0.33* (0.15)	0.39 (0.20)	0.50* (0.23)	0.50 (0.26)	0.34 (0.27)	1.70*** (0.18)						
ROH7	-0.28** (0.10)	-0.29* (0.14)	-0.28 (0.16)	-0.22 (0.18)	-0.22 (0.19)	-0.42* (0.19)	1.36*** (0.07)					
ROH14	0.01 (0.05)	-0.04 (0.07)	-0.14 (0.08)	-0.15 (0.09)	-0.20* (0.09)	-0.23* (0.10)	-0.15 (0.11)	1.40*** (0.12)				
ROH21	0.03 (0.05)	0.00 (0.07)	0.06 (0.08)	-0.01 (0.09)	0.02 (0.10)	0.03 (0.10)	-0.15 (0.12)	-0.32 (0.18)	1.11*** (0.15)			
ROH30	-0.08 (0.05)	-0.06 (0.06)	-0.11 (0.07)	-0.11 (0.08)	-0.13 (0.08)	-0.12 (0.09)	-0.10 (0.10)	-0.04 (0.15)	-0.10 (0.19)	1.05*** (0.12)		
ROH60	-0.01 (0.06)	-0.02 (0.08)	0.04 (0.09)	0.04 (0.11)	0.03 (0.11)	-0.04 (0.12)	-0.00 (0.13)	0.10 (0.21)	0.17 (0.25)	0.08 (0.27)	1.45*** (0.25)	
ROH90	0.03 (0.06)	0.03 (0.08)	0.05 (0.10)	0.04 (0.11)	0.06 (0.11)	0.12 (0.12)	0.06 (0.14)	-0.18 (0.21)	-0.16 (0.25)	-0.08 (0.28)	-0.24 (0.31)	1.31*** (0.17)
R ²	0.97	0.95	0.94	0.92	0.91	0.90	0.87	0.70	0.56	0.47	0.32	0.24
Adj. R ²	0.97	0.95	0.94	0.92	0.91	0.90	0.86	0.68	0.54	0.45	0.30	0.22
Num. obs.	296	296	296	296	296	296	296	296	296	296	296	296
RMSE	2.22	2.96	3.42	3.84	4.04	4.30	4.95	7.55	9.10	9.95	11.26	11.87

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

```

#           levels = c(paste0('DBA', agg)))
MAE4melt$Model = factor(MAE4melt$Model,
                        levels=c('apk','mpk','reg','nn','knn','wknn', 'dtree', 'rf','svr'))

plotMAE1 = ggplot(MAE4melt, aes(x=DBA, y=value, group=Model, color=Model)) +
  geom_line(aes(color=Model), size=1)+
  geom_point(aes(color=Model), size=1)+
#   scale_color_manual(values=j1)+
#   scale_color_brewer(palette="Set2")+
  xlab('DBA') + ylab('Mean Absolute Errors') +
  theme_minimal() +
  theme(legend.position = 'none')
# +ylim(0,15)+
#   theme(axis.text.x = element_text(angle=45, vjust=0.5))

MPE4 = MPE_ALL[-13, c(1,3,8,9)]
rownames(MPE4) = agg
MPE4melt = melt(as.matrix(MPE4), varnames=c('DBA', 'Model'))
MPE4melt$DBA = factor(MPE4melt$DBA, levels = agg)
#           levels = c(paste0('DBA', agg)))
MPE4melt$Model = factor(MPE4melt$Model,
                        levels=c('apk','mpk','reg','nn','knn','wknn', 'dtree', 'rf','svr'))

plotMPE1 = ggplot(MPE4melt, aes(x=DBA, y=value, group=Model, color=Model)) +
  geom_line(aes(color=Model), size=1)+
  geom_point(aes(color=Model), size=1)+
  scale_color_manual(values=j1)+
#   scale_color_brewer(palette="Set2")+
  xlab('DBA') + ylab('Mean Percentage Errors') +
  theme_minimal() +
  theme(legend.position = 'none') # +ylim(0,15)+
#   theme(axis.text.x = element_text(angle=45, vjust=0.5))

MAPE4 = MAPE_ALL[-13, c(1,3,8,9)]
rownames(MAPE4) = agg
MAPE4melt = melt(as.matrix(MAPE4), varnames=c('DBA', 'Model'))
MAPE4melt$DBA = factor(MAPE4melt$DBA, levels = agg)
#           levels = c(paste0('DBA', agg)))
MAPE4melt$Model = factor(MAPE4melt$Model,

```

```

        levels=c('apk','mpk','reg','nn','knn','wknn', 'dtree', 'rf','svr'))

plotMAPE1 = ggplot(MAPE4melt, aes(x=DBA, y=value, group=Model, color=Model)) +
  geom_line(aes(color=Model), size=1)+
  geom_point(aes(color=Model), size=1)+
  scale_color_manual(values=j1)+
  # scale_color_brewer(palette="Set2")+
  xlab('DBA') + ylab('Mean Absolute Percentage Errors') +
  theme_minimal() +
  theme(legend.position = 'none') #+ylim(0,15)+
  # theme(axis.text.x = element_text(angle=45, vjust=0.5))

SDE4 = SDE_ALL[-13, c(1,3,8,9)]
rownames(SDE4) = agg
SDE4melt = melt(as.matrix(SDE4), varnames=c('DBA', 'Model'))
SDE4melt$DBA = factor(SDE4melt$DBA, levels = agg)
# levels = c(paste0('DBA', agg)))
SDE4melt$Model = factor(SDE4melt$Model,
  levels=c('apk','mpk','reg','nn','knn','wknn', 'dtree', 'rf','svr'))

plotSDE1 = ggplot(SDE4melt, aes(x=DBA, y=value, group=Model, color=Model)) +
  geom_line(aes(color=Model), size=1)+
  geom_point(aes(color=Model), size=1)+
  scale_color_manual(values=j1)+
  # scale_color_brewer(palette="Set2")+
  xlab('DBA') + ylab('Standard Deviation Errors') +
  theme_minimal() #+ylim(0,15)+
  # theme(axis.text.x = element_text(angle=45, vjust=0.5))

grid_arrange_shared_legend(plotME1, plotMPE1, plotMAE1, plotMAPE1, plotSDE1, nrow=1)

```

