package com.twitter.timelines.prediction.features.real\_graph

import com.twitter.ml.featurestore.catalog.entities.core.UserAuthor

import com.twitter.ml.featurestore.catalog.features.timelines.RealGraph

import com.twitter.ml.featurestore.lib.EdgeEntityId

import com.twitter.ml.featurestore.lib.UserId

import com.twitter.ml.featurestore.lib.feature.BoundFeatureSet

import com.twitter.ml.featurestore.lib.feature.Feature

import com.twitter.ml.featurestore.lib.feature.FeatureSet

object RealGraphDataRecordFeatureStoreFeatures {

val boundUserAuthorfeatureSet: BoundFeatureSet = FeatureSet(

RealGraph.DestId,

RealGraph.AddressBookEmail.DaysSinceLast,

RealGraph.AddressBookEmail.ElapsedDays,

RealGraph.AddressBookEmail.Ewma,

RealGraph.AddressBookEmail.IsMissing,

RealGraph.AddressBookEmail.Mean,

RealGraph.AddressBookEmail.NonZeroDays,

RealGraph.AddressBookEmail.Variance,

RealGraph.AddressBookInBoth.DaysSinceLast,

RealGraph.AddressBookInBoth.ElapsedDays,

RealGraph.AddressBookInBoth.Ewma,

RealGraph.AddressBookInBoth.IsMissing,

RealGraph.AddressBookInBoth.Mean,

RealGraph.AddressBookInBoth.NonZeroDays,

RealGraph.AddressBookInBoth.Variance,

RealGraph.AddressBookMutualEdgeEmail.DaysSinceLast,

RealGraph.AddressBookMutualEdgeEmail.ElapsedDays,

RealGraph.AddressBookMutualEdgeEmail.Ewma,

RealGraph.AddressBookMutualEdgeEmail.IsMissing,

RealGraph.AddressBookMutualEdgeEmail.Mean,

RealGraph.AddressBookMutualEdgeEmail.NonZeroDays,

RealGraph.AddressBookMutualEdgeEmail.Variance,

RealGraph.AddressBookMutualEdgeInBoth.DaysSinceLast,

RealGraph.AddressBookMutualEdgeInBoth.ElapsedDays,

RealGraph.AddressBookMutualEdgeInBoth.Ewma,

RealGraph.AddressBookMutualEdgeInBoth.IsMissing,

RealGraph.AddressBookMutualEdgeInBoth.Mean,

RealGraph.AddressBookMutualEdgeInBoth.NonZeroDays,

RealGraph.AddressBookMutualEdgeInBoth.Variance,

RealGraph.AddressBookMutualEdgePhone.DaysSinceLast,

RealGraph.AddressBookMutualEdgePhone.ElapsedDays,

RealGraph.AddressBookMutualEdgePhone.Ewma,

RealGraph.AddressBookMutualEdgePhone.IsMissing,

RealGraph.AddressBookMutualEdgePhone.Mean,

RealGraph.AddressBookMutualEdgePhone.NonZeroDays,

RealGraph.AddressBookMutualEdgePhone.Variance,

RealGraph.AddressBookPhone.DaysSinceLast,

RealGraph.AddressBookPhone.ElapsedDays,

RealGraph.AddressBookPhone.Ewma,

RealGraph.AddressBookPhone.IsMissing,

RealGraph.AddressBookPhone.Mean,

RealGraph.AddressBookPhone.NonZeroDays,

RealGraph.AddressBookPhone.Variance,

RealGraph.DirectMessages.DaysSinceLast,

RealGraph.DirectMessages.ElapsedDays,

RealGraph.DirectMessages.Ewma,

RealGraph.DirectMessages.IsMissing,

RealGraph.DirectMessages.Mean,

RealGraph.DirectMessages.NonZeroDays,

RealGraph.DirectMessages.Variance,

RealGraph.DwellTime.DaysSinceLast,

RealGraph.DwellTime.ElapsedDays,

RealGraph.DwellTime.Ewma,

RealGraph.DwellTime.IsMissing,

RealGraph.DwellTime.Mean,

RealGraph.DwellTime.NonZeroDays,

RealGraph.DwellTime.Variance,

RealGraph.Follow.DaysSinceLast,

RealGraph.Follow.ElapsedDays,

RealGraph.Follow.Ewma,

RealGraph.Follow.IsMissing,

RealGraph.Follow.Mean,

RealGraph.Follow.NonZeroDays,

RealGraph.Follow.Variance,

RealGraph.InspectedStatuses.DaysSinceLast,

RealGraph.InspectedStatuses.ElapsedDays,

RealGraph.InspectedStatuses.Ewma,

RealGraph.InspectedStatuses.IsMissing,

RealGraph.InspectedStatuses.Mean,

RealGraph.InspectedStatuses.NonZeroDays,

RealGraph.InspectedStatuses.Variance,

RealGraph.Likes.DaysSinceLast,

RealGraph.Likes.ElapsedDays,

RealGraph.Likes.Ewma,

RealGraph.Likes.IsMissing,

RealGraph.Likes.Mean,

RealGraph.Likes.NonZeroDays,

RealGraph.Likes.Variance,

RealGraph.LinkClicks.DaysSinceLast,

RealGraph.LinkClicks.ElapsedDays,

RealGraph.LinkClicks.Ewma,

RealGraph.LinkClicks.IsMissing,

RealGraph.LinkClicks.Mean,

RealGraph.LinkClicks.NonZeroDays,

RealGraph.LinkClicks.Variance,

RealGraph.Mentions.DaysSinceLast,

RealGraph.Mentions.ElapsedDays,

RealGraph.Mentions.Ewma,

RealGraph.Mentions.IsMissing,

RealGraph.Mentions.Mean,

RealGraph.Mentions.NonZeroDays,

RealGraph.Mentions.Variance,

RealGraph.MutualFollow.DaysSinceLast,

RealGraph.MutualFollow.ElapsedDays,

RealGraph.MutualFollow.Ewma,

RealGraph.MutualFollow.IsMissing,

RealGraph.MutualFollow.Mean,

RealGraph.MutualFollow.NonZeroDays,

RealGraph.MutualFollow.Variance,

RealGraph.NumTweetQuotes.DaysSinceLast,

RealGraph.NumTweetQuotes.ElapsedDays,

RealGraph.NumTweetQuotes.Ewma,

RealGraph.NumTweetQuotes.IsMissing,

RealGraph.NumTweetQuotes.Mean,

RealGraph.NumTweetQuotes.NonZeroDays,

RealGraph.NumTweetQuotes.Variance,

RealGraph.PhotoTags.DaysSinceLast,

RealGraph.PhotoTags.ElapsedDays,

RealGraph.PhotoTags.Ewma,

RealGraph.PhotoTags.IsMissing,

RealGraph.PhotoTags.Mean,

RealGraph.PhotoTags.NonZeroDays,

RealGraph.PhotoTags.Variance,

RealGraph.ProfileViews.DaysSinceLast,

RealGraph.ProfileViews.ElapsedDays,

RealGraph.ProfileViews.Ewma,

RealGraph.ProfileViews.IsMissing,

RealGraph.ProfileViews.Mean,

RealGraph.ProfileViews.NonZeroDays,

RealGraph.ProfileViews.Variance,

RealGraph.Retweets.DaysSinceLast,

RealGraph.Retweets.ElapsedDays,

RealGraph.Retweets.Ewma,

RealGraph.Retweets.IsMissing,

RealGraph.Retweets.Mean,

RealGraph.Retweets.NonZeroDays,

RealGraph.Retweets.Variance,

RealGraph.SmsFollow.DaysSinceLast,

RealGraph.SmsFollow.ElapsedDays,

RealGraph.SmsFollow.Ewma,

RealGraph.SmsFollow.IsMissing,

RealGraph.SmsFollow.Mean,

RealGraph.SmsFollow.NonZeroDays,

RealGraph.SmsFollow.Variance,

RealGraph.TweetClicks.DaysSinceLast,

RealGraph.TweetClicks.ElapsedDays,

RealGraph.TweetClicks.Ewma,

RealGraph.TweetClicks.IsMissing,

RealGraph.TweetClicks.Mean,

RealGraph.TweetClicks.NonZeroDays,

RealGraph.TweetClicks.Variance,

RealGraph.Weight

).bind(UserAuthor)

private[this] val edgeFeatures: Seq[RealGraph.EdgeFeature] = Seq(

RealGraph.AddressBookEmail,

RealGraph.AddressBookInBoth,

RealGraph.AddressBookMutualEdgeEmail,

RealGraph.AddressBookMutualEdgeInBoth,

RealGraph.AddressBookMutualEdgePhone,

RealGraph.AddressBookPhone,

RealGraph.DirectMessages,

RealGraph.DwellTime,

RealGraph.Follow,

RealGraph.InspectedStatuses,

RealGraph.Likes,

RealGraph.LinkClicks,

RealGraph.Mentions,

RealGraph.MutualFollow,

RealGraph.PhotoTags,

RealGraph.ProfileViews,

RealGraph.Retweets,

RealGraph.SmsFollow,

RealGraph.TweetClicks

)

val htlDoubleFeatures: Set[Feature[EdgeEntityId[UserId, UserId], Double]] = {

val features = edgeFeatures.flatMap { ef =>

Seq(ef.Ewma, ef.Mean, ef.Variance)

} ++ Seq(RealGraph.Weight)

features.toSet

}

val htlLongFeatures: Set[Feature[EdgeEntityId[UserId, UserId], Long]] = {

val features = edgeFeatures.flatMap { ef =>

Seq(ef.DaysSinceLast, ef.ElapsedDays, ef.NonZeroDays)

}

features.toSet

}

private val edgeFeatureToLegacyName = Map(

RealGraph.AddressBookEmail -> "num\_address\_book\_email",

RealGraph.AddressBookInBoth -> "num\_address\_book\_in\_both",

RealGraph.AddressBookMutualEdgeEmail -> "num\_address\_book\_mutual\_edge\_email",

RealGraph.AddressBookMutualEdgeInBoth -> "num\_address\_book\_mutual\_edge\_in\_both",

RealGraph.AddressBookMutualEdgePhone -> "num\_address\_book\_mutual\_edge\_phone",

RealGraph.AddressBookPhone -> "num\_address\_book\_phone",

RealGraph.DirectMessages -> "direct\_messages",

RealGraph.DwellTime -> "total\_dwell\_time",

RealGraph.Follow -> "num\_follow",

RealGraph.InspectedStatuses -> "num\_inspected\_tweets",

RealGraph.Likes -> "num\_favorites",

RealGraph.LinkClicks -> "num\_link\_clicks",

RealGraph.Mentions -> "num\_mentions",

RealGraph.MutualFollow -> "num\_mutual\_follow",

RealGraph.PhotoTags -> "num\_photo\_tags",

RealGraph.ProfileViews -> "num\_profile\_views",

RealGraph.Retweets -> "num\_retweets",

RealGraph.SmsFollow -> "num\_sms\_follow",

RealGraph.TweetClicks -> "num\_tweet\_clicks",

)

def convertFeatureToLegacyName(

prefix: String,

variance: String = "variance"

): Map[Feature[EdgeEntityId[UserId, UserId], \_ >: Long with Double <: AnyVal], String] =

edgeFeatureToLegacyName.flatMap {

case (k, v) =>

Seq(

k.NonZeroDays -> s"${prefix}.${v}.non\_zero\_days",

k.DaysSinceLast -> s"${prefix}.${v}.days\_since\_last",

k.ElapsedDays -> s"${prefix}.${v}.elapsed\_days",

k.Ewma -> s"${prefix}.${v}.ewma",

k.Mean -> s"${prefix}.${v}.mean",

k.Variance -> s"${prefix}.${v}.${variance}",

)

} ++ Map(

RealGraph.Weight -> (prefix + ".weight")

)

}