# CS 464 Project

## Telecom Customer Churn Rate Prediction


**Group 5**

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# Project Description

- The objective of this project is predicting user’s churn rate, which occurs when a customer stops using the service.
- Predicting whether a customer is leaving or not at the end of the contract term is done by looking at the customer’s data according to the features determined at the time of training.

Person in doubt [1]

# Dataset Description

- The dataset to be used is that of Telco's Customer Data [2]
- The raw data contains 7043 rows (customers) and 21 columns (features).

| customerID | gender | SeniorCitizen | Partner | Dependents |
|---|---|---|---|---|
| Customer ID | Customer gender (female, male) | Whether the customer is a senior citizen or not (1, 0) | Whether the customer has a partner or not (Yes, No) | Whether the customer has dependents or not (Yes, No) |

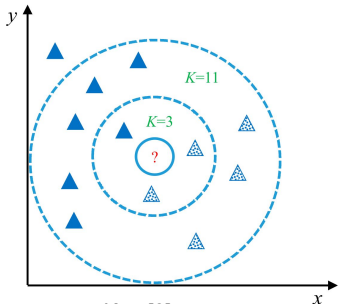
# Features

- customerID
- Gender,
- SeniorCitizen
- Partner,
- Dependents
- Tenure
- PhoneService
- MultipleLines
- InternetService
- OnlineSecurity
- OnlineBackup,
- DeviceProtection
- TechSupport
- StreamingTV
- StreamingMovies
- Contract
- PaperlessBilling
- PaymentMethod
- MonthlyCharges
- TotalCharges
- **Churn**

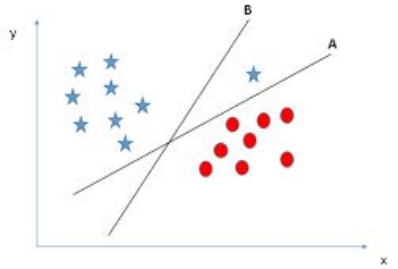
# Training process

We will be using different machine learning methods like:

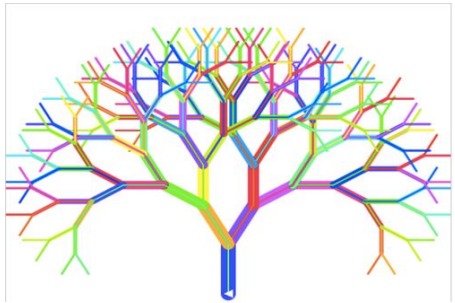
- SVM
- kNN
- logistic regression
- decision tree classification
- random forest classification



Knn [3]



SVM [4]


Random forest [5]

Success of different methods will be compared to find optimal one(s).

# Results and Expectations

- We expect to see the relation between user data and churning.
- It’s expected that customers with long tenure and seniority are less likely to churn.
- Hidden features may be discovered during the process as well

# References

[1] Person in doubt, [Online]. Available: https://www.psychologytoday.com/au/blog/children-the-table/201806/when-child-tells. [Accessed: Oct. 11, 2018]

[2] Blast Char ”Telco Customer Churn”. Kaggle. [Online]. Available: https://www.kaggle.com/blastchar/telco-customer-churn. [Accessed: Oct. 2, 2018]

[3] knn Graph, [Online]. Available: https://www.google.com.tr/search?q=knn&source=lnms&tbm=isch&sa=X&ved=0ahUKEwi2xc-fgf_dAhXF_CoKHcdcAfoQ_AUIDygC&biw=1366&bih=613#imgrc=zWukqNn05iZXEM: [Accessed: Oct. 11, 2018]

# References

[4] SVM Graph, [Online]. Available: https://www.analyticsvidhya.com/wp-content/uploads/2015/10/SVM_1.png. [Accessed: Oct. 11, 2018]

[5] Random forest animation, [Online]. Available: https://www.google.com.tr/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwim3KjIgv_dAhUFzaQKHd0XCJ0QjRx6BAgBEAU&url=http%3A%2F%2Fcagriemreakin.com%2Fveri-bilimi%2Frandom-forest-classification-10.html&psig=AOvVaw3CyZGO5GS--DYwxZ2S1bZL&ust=1539369042818892. [Accessed: Oct. 11, 2018]