Mining Data from Networks

UNDERSTANDING NETWORKS

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Module Overview

Introduce and understand networks and network analysis

Introduce and understand key network components

Implement and visualize a network using Python and NetworkX

Differentiate between directed and undirected networks

Understanding Networks

Networks

A useful method for modeling, visualizing, and analyzing the relationships between entities.

Networks

Social Network

Transportation Network

Biological Network

Network Analysis Applications

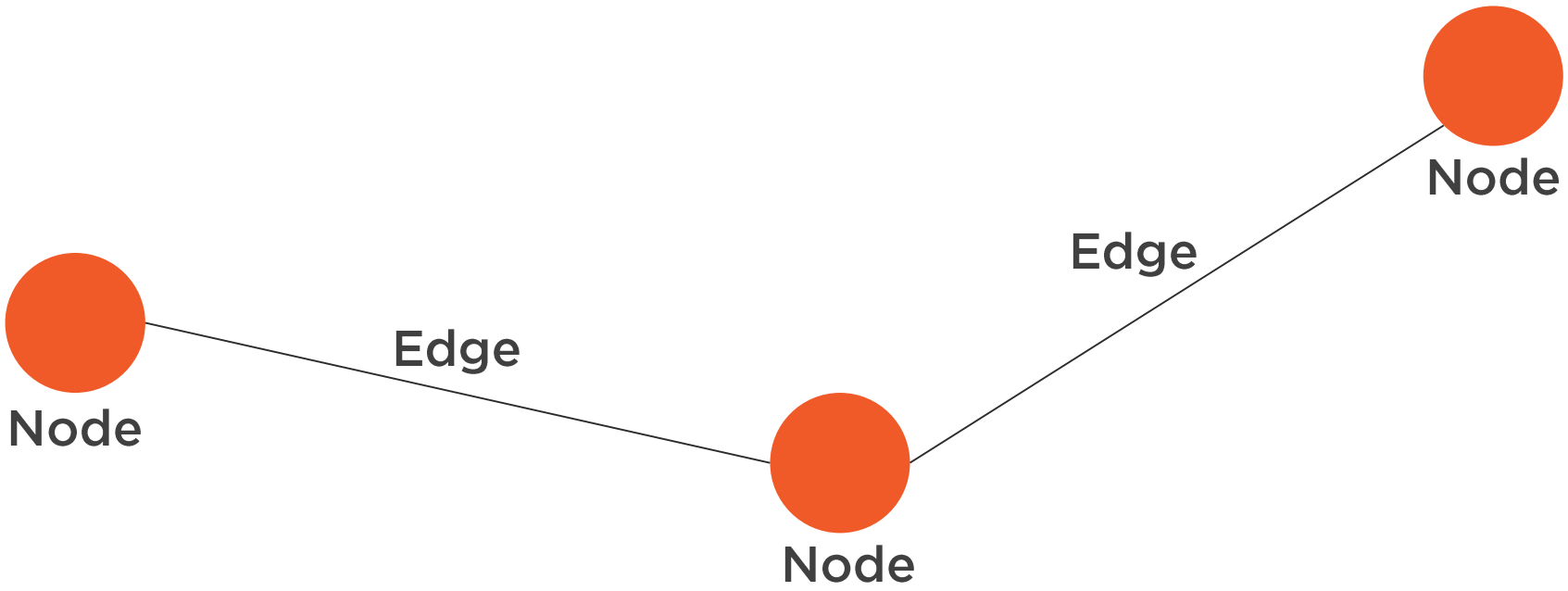
Social Network:
Analyze a social network to find common traits of connections. Focus on needs of existing customers or how to acquire new customers.

Transportation Network:
Analyze a cities traffic network to find high traffic areas and times. Use for city planning or for best route planning.

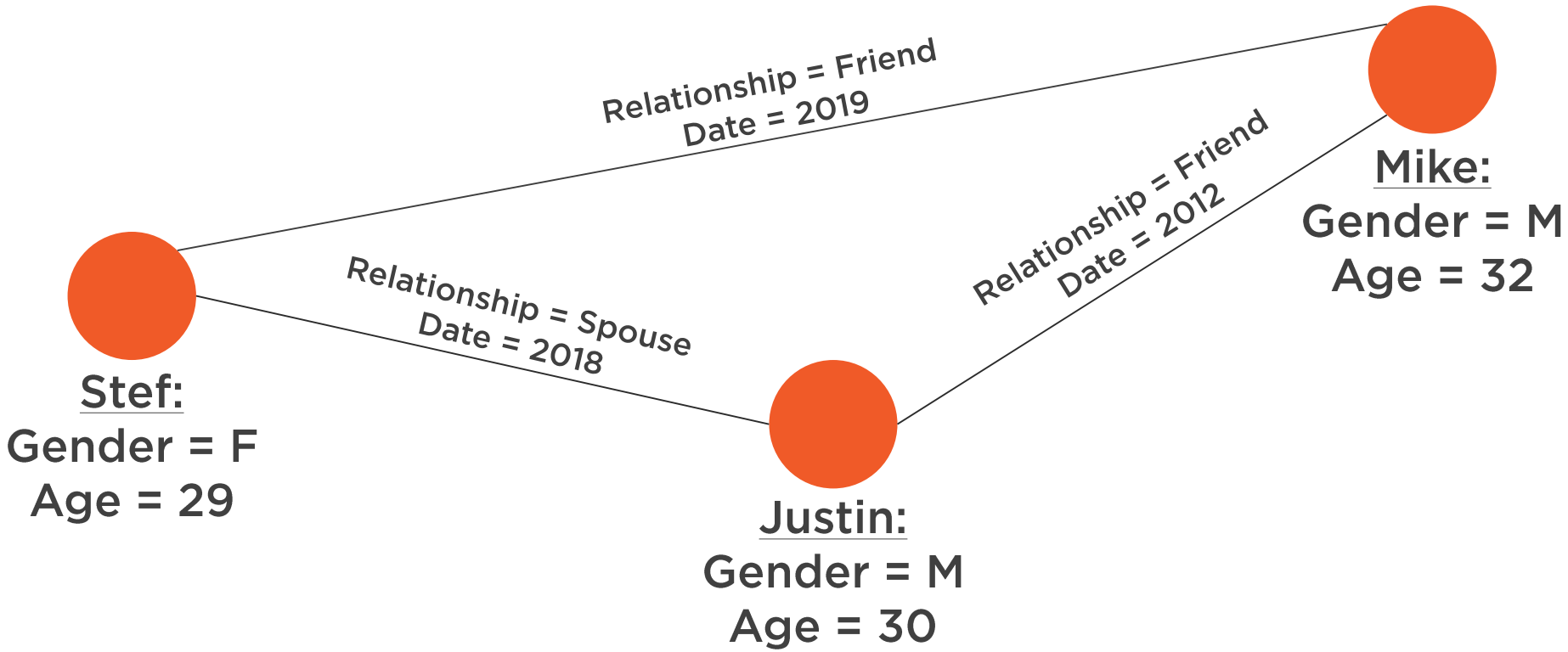
Biological Network:
Analyze a biological network to find relationships between traits and diseases. Develop new medicines or suggest preventative measures.

Network Components

Network Components



Network Components



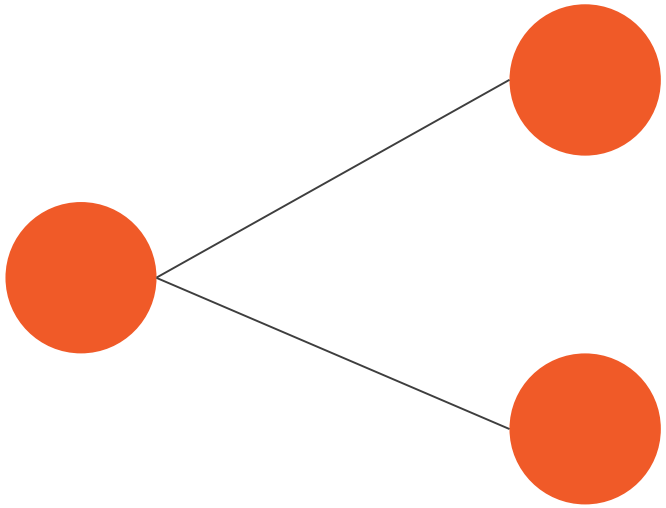
Implementing a Network with NetworkX

NetworkX

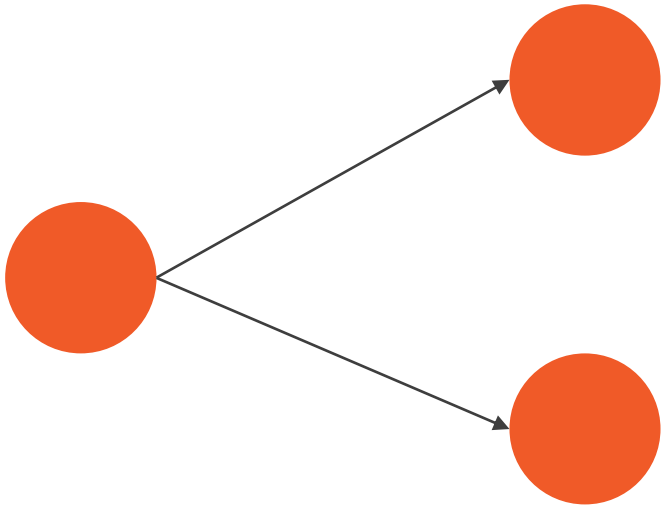
A Python package for the creation, manipulation, and study of complex networks.

Directed and Undirected Networks

Directed and Undirected Networks



Undirected Network



Directed Network

Summary

- Introduced and understood networks and network analysis
- Introduced and understood key network components
- Implemented and visualized a network using Python and NetworkX
- Differentiated between directed and undirected networks