1 Problem with solution 280

1.1 TSNE representation
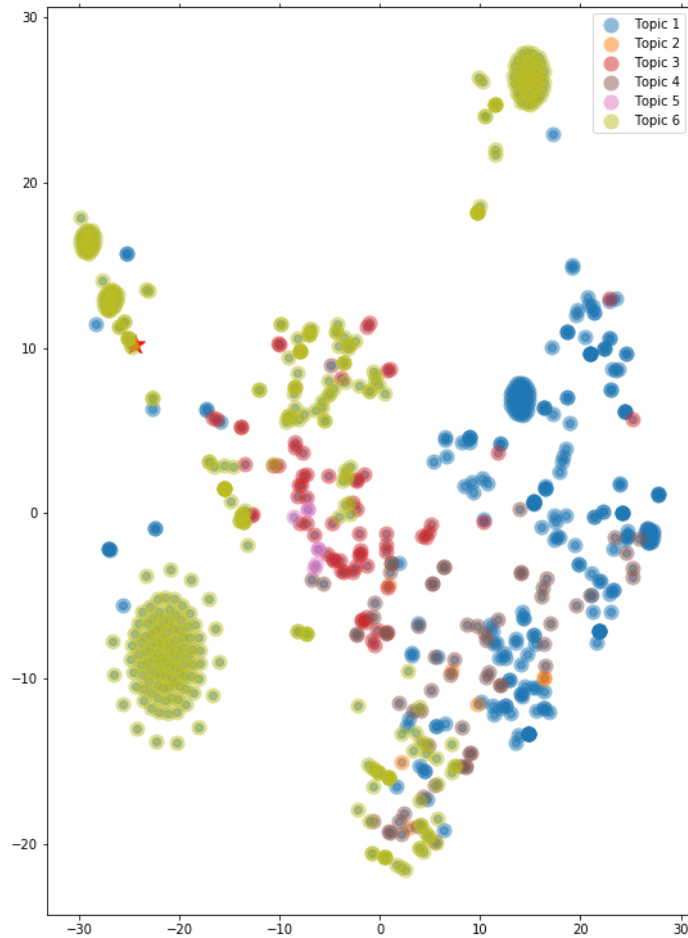

Figure 1: TSNE 2d feature space

1.2 Problem and Solution

Write a python program to access environment variables.

```python
from __future__ import print_function
import sys

def eprint(*args, **kwargs):
    print(*args, file=sys.stderr, **kwargs)

eprint("abc", "efg", "xyz", sep="--")
```

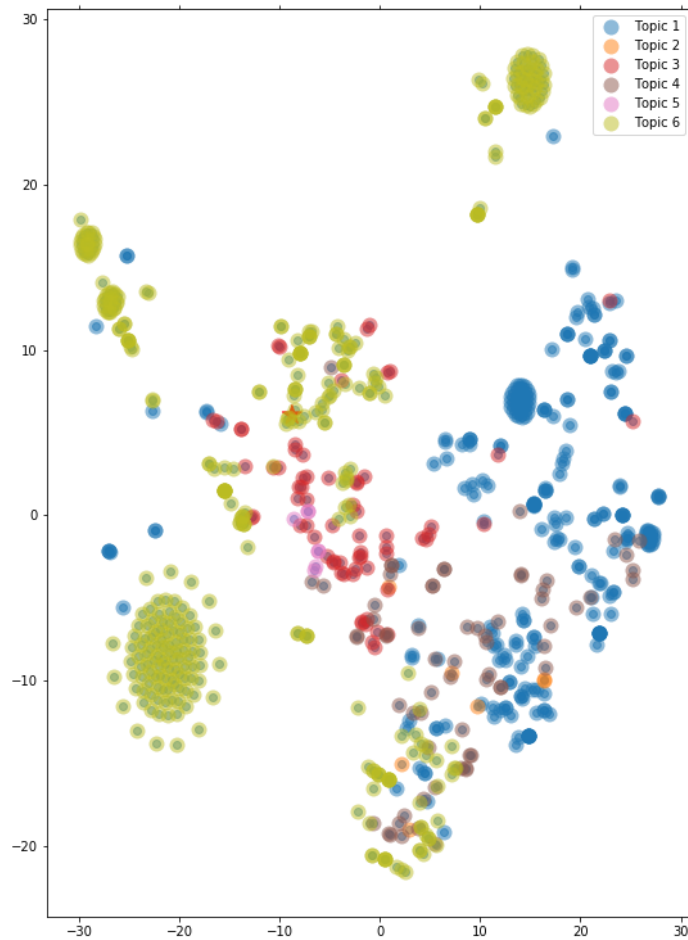# 2 Problem with solution 80

2.1 TSNE representation

Figure 2: TSNE 2d feature space

2.2 Problem and Solution

A circular swimming pool is x metres in diameter. What volume of water does it contain if the pool is the same depth at all points?

```
import math
```

```
print("Circular Swimming Pool")
print("This program calculates the volume of a circular swimming pool")
print()
diameter = float(input("Please enter the diameter of the pool: "))
depth = float(input("Please enter the depth of the pool: "))
radius = diameter/2
#radius**2 means radius squared
area = round(math.pi * radius**2,2)
volume = round(area * depth,2)
print()
print("The volume of the swimming pool is {0}.".format(volume))
```

3 Problem with solution 75
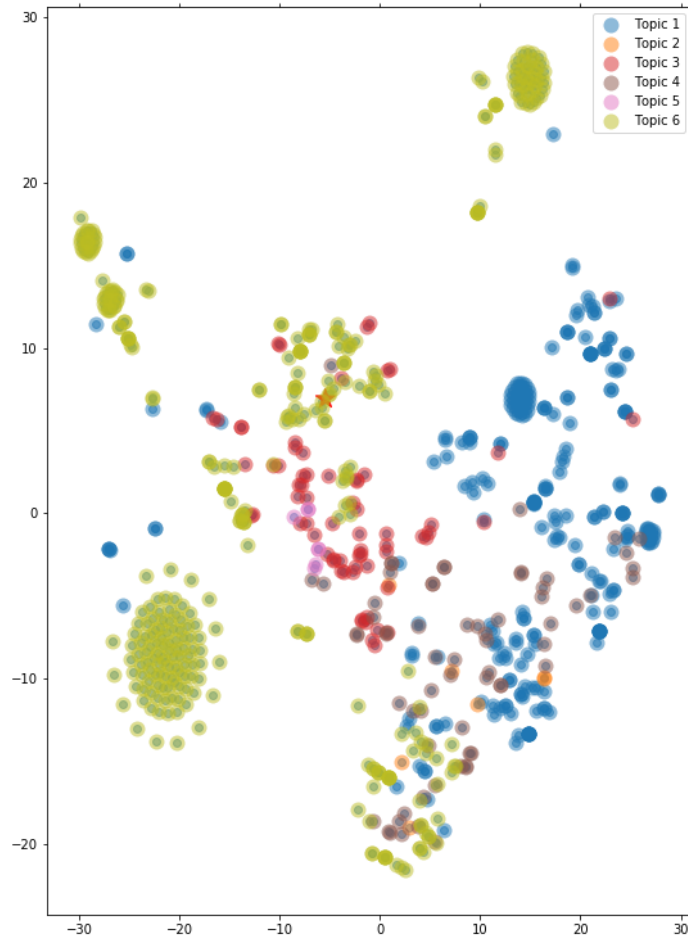
3.1 TSNE representation

Figure 3: TSNE 2d feature space

3.2 Problem and Solution

Improve the previous program to show only the integer part of the answer.

```
("Dividing - improved")
 print("This program asks for two numbers and then divides them,")
 print("it then displays the number of times one goes into the other")
 print()
 num1 = int(input("Please enter a number: "))
 num2 = int(input("Please enter a second number: "))
 print()
 #many ways to do this
 intans = num1 // num2
 #intans = int(num1/num2)
 #intans = int(round(num1/num2,0))
 remainder = num1 % num2
 print("{0}/{1} = {2}.".format(num1,num2,intans,remainder))
```

4 Problem with solution 66
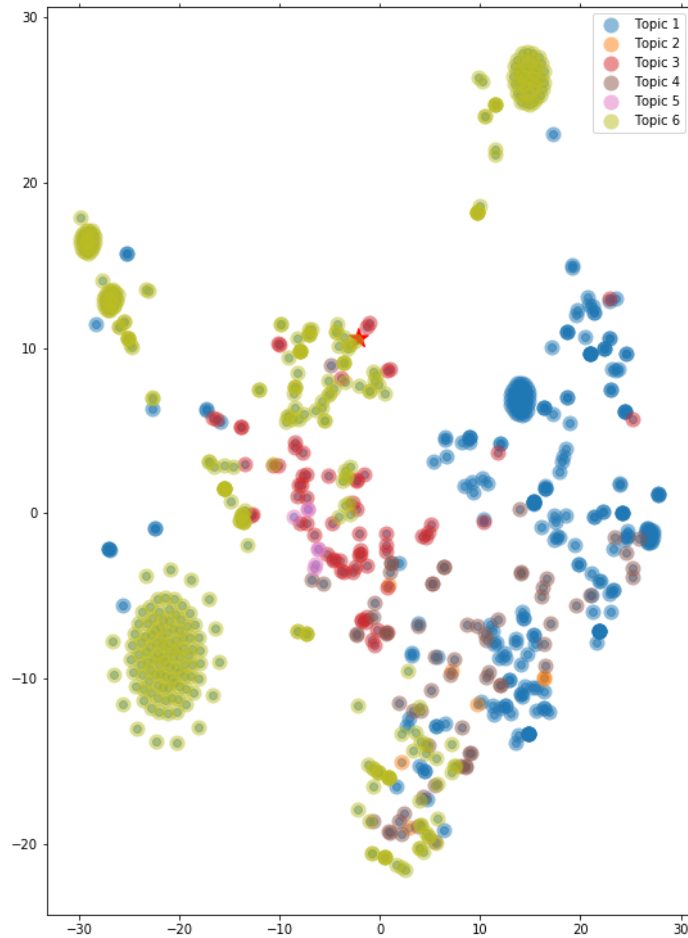
4.1 TSNE representation

Figure 4: TSNE 2d feature space

4.2 Problem and Solution

Exercise 2 Basics
Write a program to input two whole numbers,
add them together and print the result to the screen.

```
def main():
    number1= int(input("Enter your first number "))
    number2= int(input("Enter your second number "))
    sumOfNumbers = number1 + number2
    print("{0} + {1} = {2}".format(number1,number2,sumOfNumbers))
```

5 Problem with solution 72
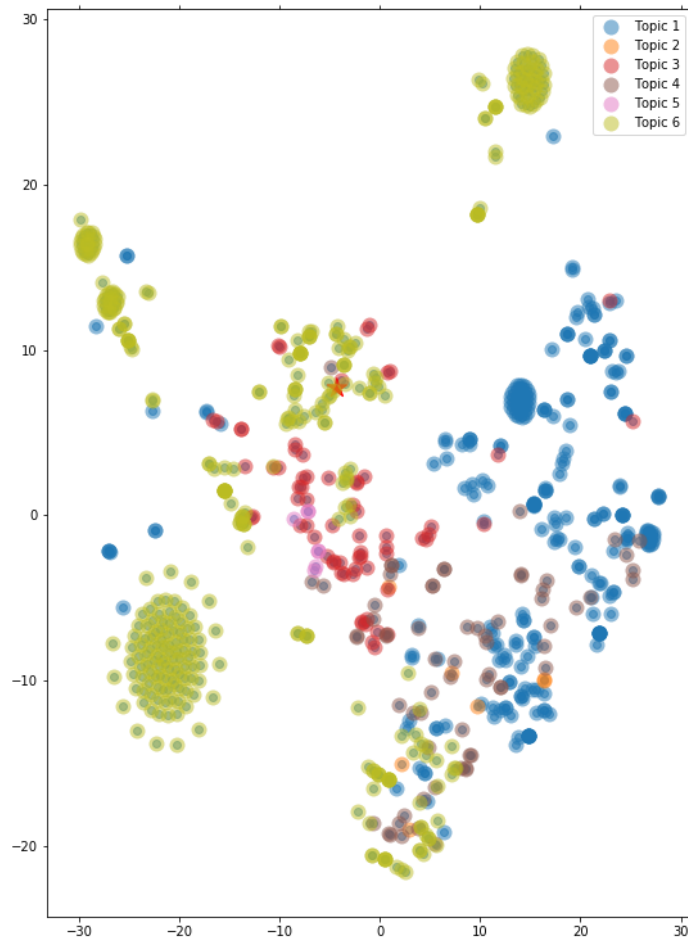
5.1 TSNE representation

Figure 5: TSNE 2d feature space

5.2 Problem and Solution

Write a program that will ask the user for four integer numbers and then add these numbers together before displaying the answer. The input and output should be user friendly.

```
print("Number Addition")
print("This program asks for three numbers and then outputs the total")
print()
num1 = int(input("Please enter a number: "))
num2 = int(input("Please enter a second number: "))
num3 = int(input("Please enter a third number: "))
print()
ans = num1 + num2 + num3
print("The total of {0} + {1} + {2} is {3}.".format(num1,num2,num3,ans))
```

6 Problem with solution 74
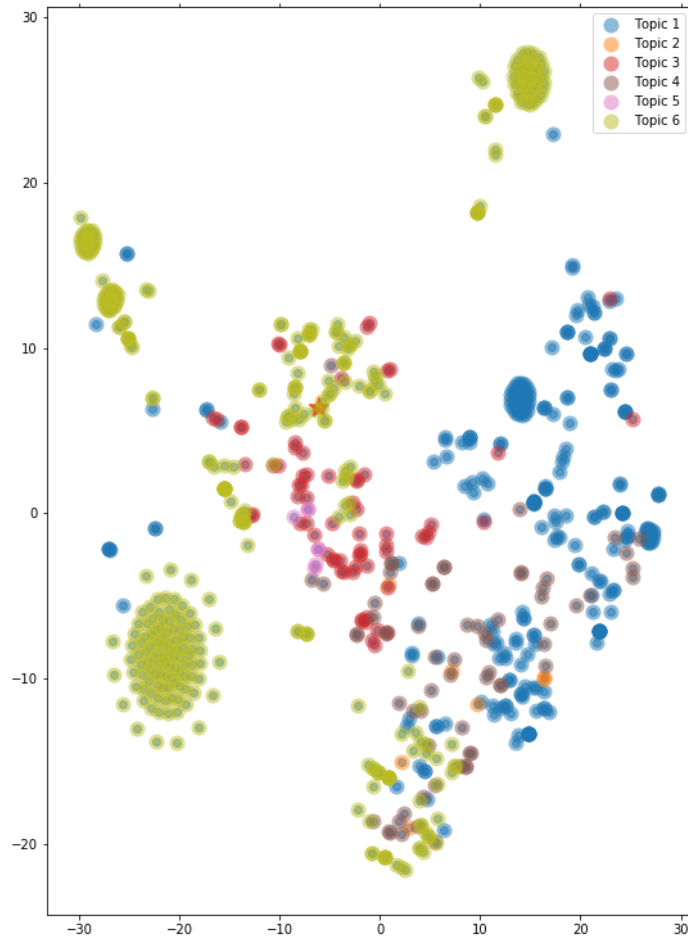
6.1 TSNE representation

Figure 6: TSNE 2d feature space

6.2 Problem and Solution

Write a program that will ask the user for two numbers a then divide one by the other. The number of times one goes into another and the remainder should be displayed. For example, If 3 and 2 were entered: $3/2$ = 1 remainder 1. The input and output should be user friendly.

```
print("Dividing")
print("This program asks for two numbers and then divides them,")
print("it then displays the number of times one goes into the other and")
print("the remainder")
print()
num1 = int(input("Please enter a number: "))
num2 = int(input("Please enter a second number: "))
print()
intans = num1 // num2
remainder = num1 % num2
print("{0}/{1} = {2} remainder {3}.".format(num1,num2,intans,remainder))
```

7 Problem with solution 65
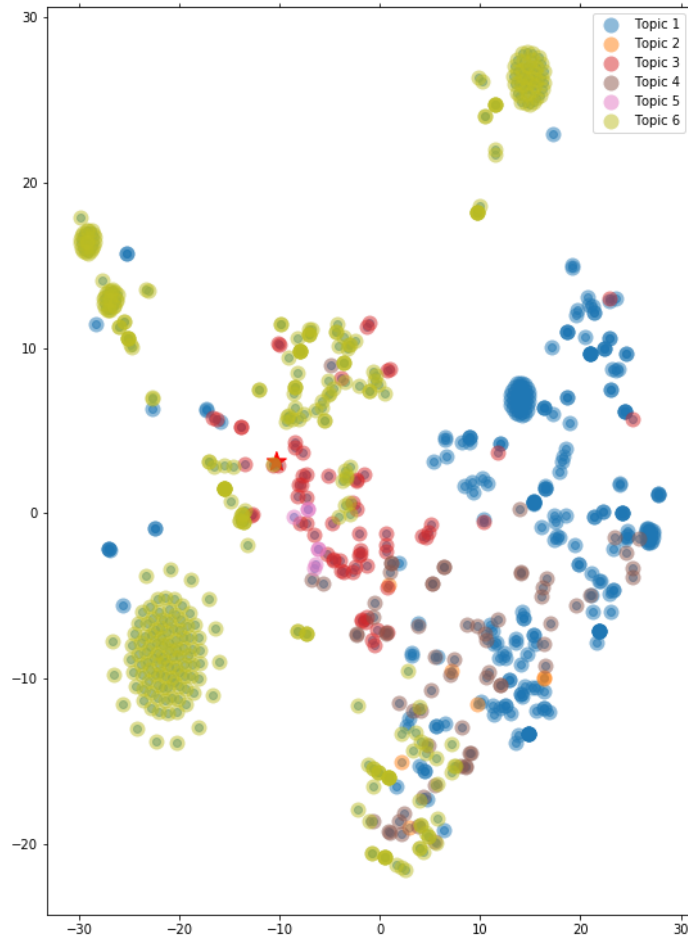
7.1 TSNE representation

Figure 7: TSNE 2d feature space

7.2 Problem and Solution

Exercise 1 Basics
Write a program to input two messages and output them to a user

```
def main():
    message1= input("Enter your first message ")
    message2= input("Enter your second message ")
    print("Your first message was {0} ".format(message1))
    print("Your second message was {0} ".format(message2))
```

8 Problem with solution 84
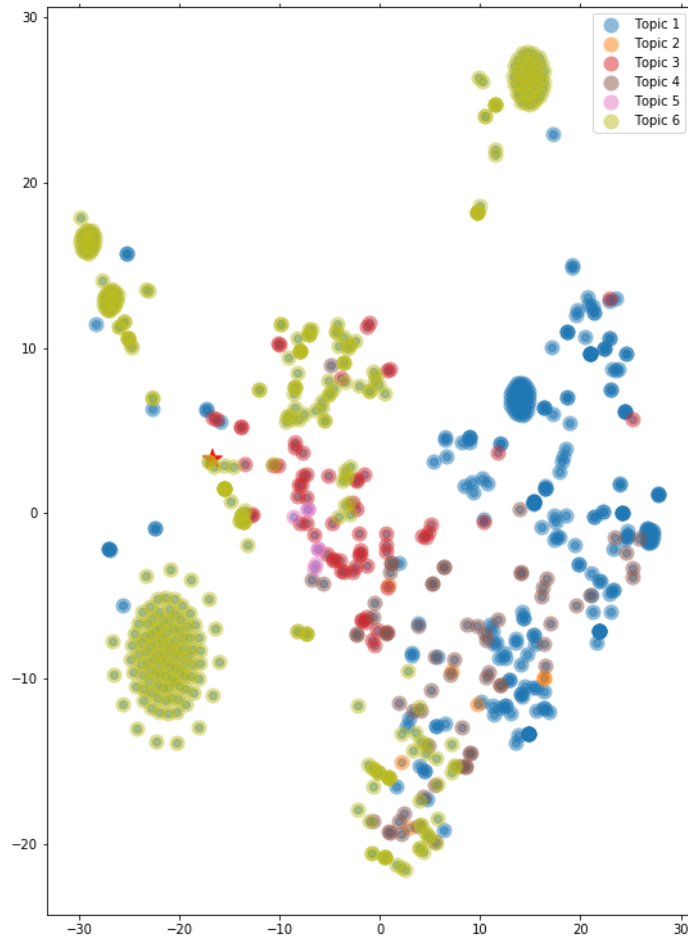
8.1 TSNE representation

Figure 8: TSNE 2d feature space

8.2 Problem and Solution

The foot of a ladder is 1.5m from a vertical wall. The ladder makes an angle of 68 degrees with the horizontal. How far up the wall does the ladder reach?

```
import math
```

```
print("Ladder Height")
print("This program calculates how far a ladder reaches up a wall")
print("when given the number of degrees the ladder makes with the horizontal")
print("and its distance from the wall.")
print()
degreesFromHorizontal = float(68)
distanceFromWall = float(1.5)
#degrees in radians
radiansFromHorizontal = math.radians(degreesFromHorizontal)
#tan
tan = math.tan(radiansFromHorizontal)
wallReach = round(tan * distanceFromWall,2)
print("The ladder reaches {0} up the wall.".format(wallReach))
```

9 Problem with solution 642
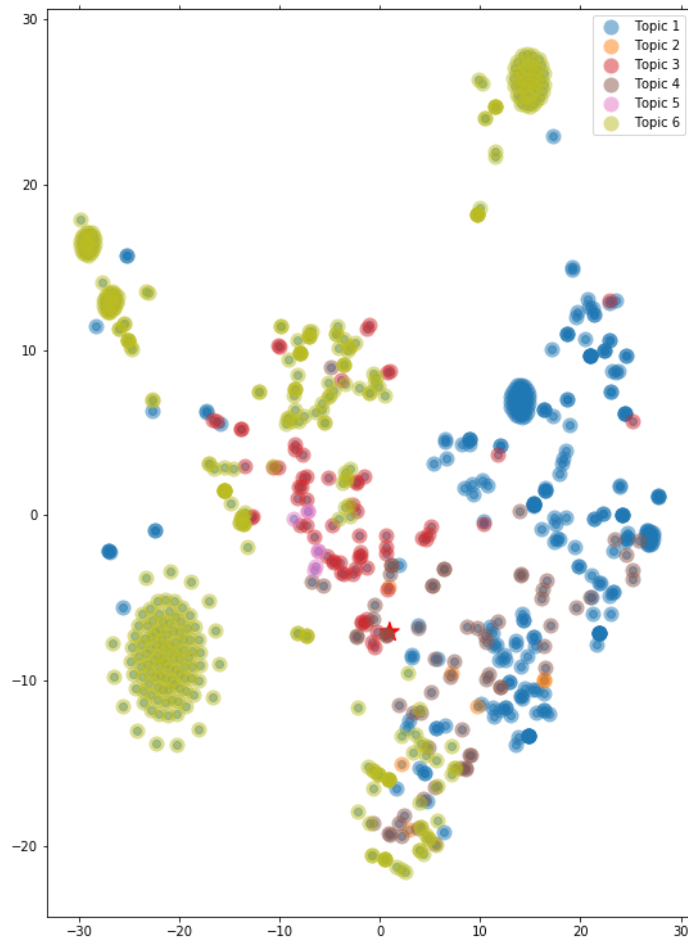
9.1 TSNE representation

Figure 9: TSNE 2d feature space

9.2 Problem and Solution

Write a Python program to display astrological sign for given date of birth.

Expected Output: Input birthday: 15
Input month of birth (e.g. march, july etc): may
Your Astrological sign is : Taurus

```
print("Input lengths of the triangle sides: ")
x = int(input("x: "))
y = int(input("y: "))
z = int(input("z: "))

if x == y == z:
print("Equilateral triangle")
elif x != y != z:
print("Scalene triangle")
else:
print("isosceles triangle")
```

10 Problem with solution 85
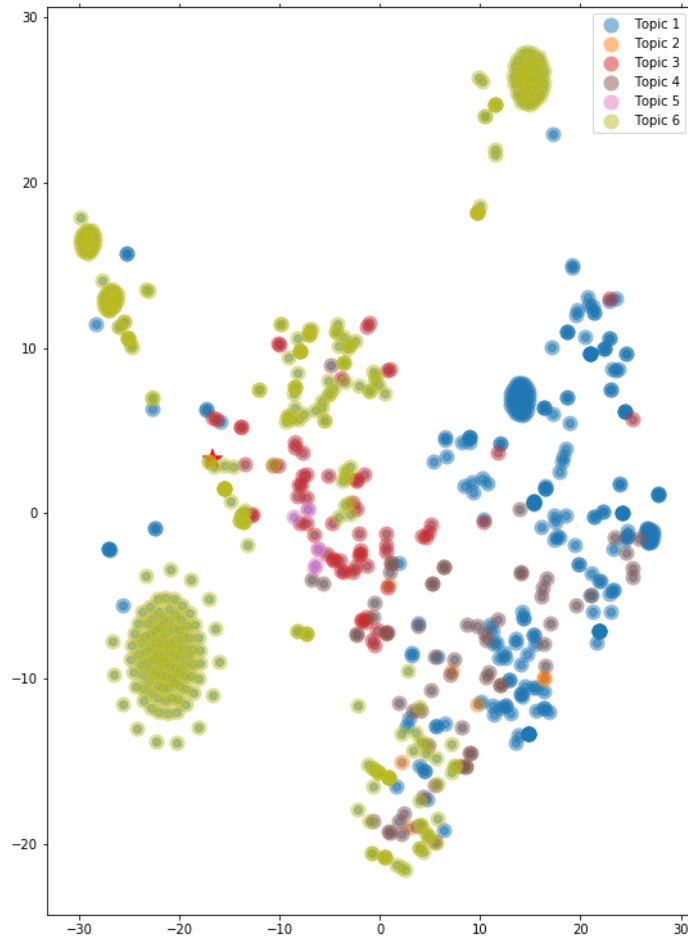
10.1 TSNE representation

Figure 10: TSNE 2d feature space

10.2 Problem and Solution

The string of a balloon is 120m long and makes an angle of 70 degrees with the horizontal. What is the height of the balloon.

```
import math
```

```
print("Balloon Height")
print("This program calculates how high a balloon has reached")
print("when given the number of degrees the string makes with the horizontal")
print("and the length of the string")
print()
degreesFromHorizontal = float(70)
lengthOfString = float(120)
#degrees in radians
radiansFromHorizontal = math.radians(degreesFromHorizontal)
#sine
sine = math.sin(radiansFromHorizontal)
balloonHeight = round(sine * lengthOfString,2)
print("The balloon is {0} in the air.".format(balloonHeight))
```