

# Mind Wandering and Machine Learning

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## Introduction

Mind wandering can serve important function for our performance and wellbeing. It can stimulate creativity, particularly "divergent thinking" to come up with novel ideas and at the same time help understand which particular thoughts are bothering a person at a given time. Machine Learning can help to understand the beauty of this whole mind wandering world.

## Goal

Finding out variation of thoughts over time to understand mind wandering and also correlate this variation with the level of ADHD in people.

To understand which set of topics comes to people while mind wandering and how it vary in people with High ADHD and Low ADHD.

## Dataset

The dataset is collected from Psychology Department UNH.

## Hypothesis

- People with ADHD value above 3.6 and number of ADHD symptoms above 4 are considered HIGH ADHD.
- People with ADHD value below 2.3 and number of ADHD symptoms below 3 are considered LOW ADHD.

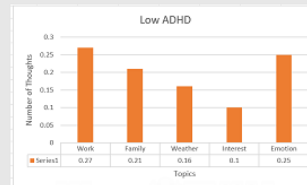
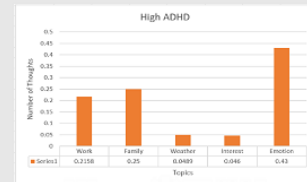
## Method

- A model was designed that takes high volume of student's thoughts while attending a class.
- Text was then processed using various levels of iteration of Topic modelling and K Means clustering to extract 5 main topics.

Work	Family	Weather	Interest	Emotion
time	together	weather	music	felt
study	social	play	wrote	happy
clean	dog	game	interest	miss
hope	save	trip	travel	hope
work	fun	rain	cook	stress
grade	care	drive	dog	glad
friend	honest	active	participate	experience
tire	forget	enjoy	sing	sleep
focus	hate	happy	exercise	funny
fail	family	summer	relax	bore

- The topics were compared against each thoughts to get cosine similarity. The results were used to model a state transition matrix.
- Markov Chain model is then used to get the most visited topic by student with high and low ADHD.
- Based on the training data, the testing dataset were labelled as High and Low ADHD based on the most visited topic.

## Result



## Conclusion

- People with High ADHD are more likely to visit topics related to emotion.
- People with Low ADHD are distributed more or less to all the topics closely.

## Future Work

Make the model more robust