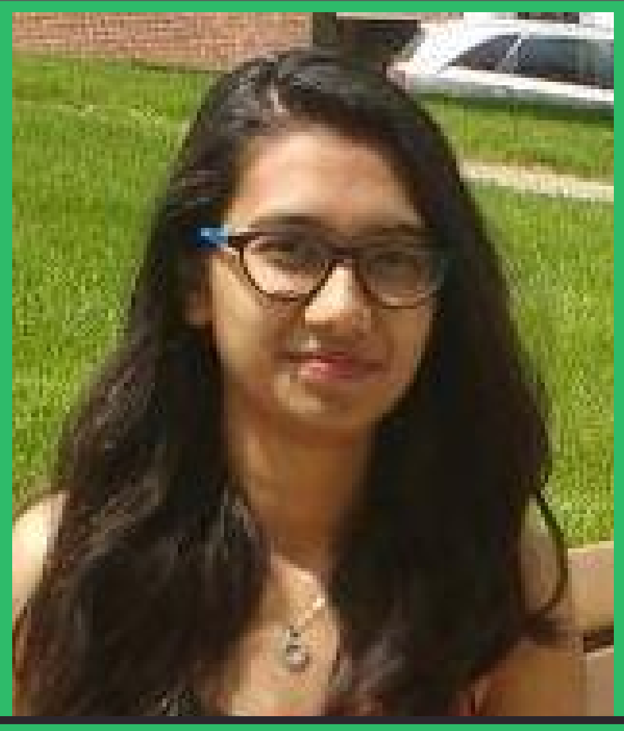

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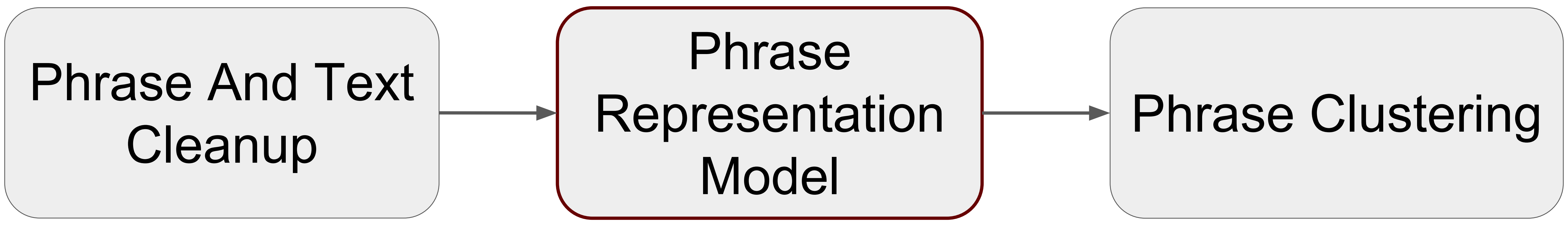
Concept/ Theme Rollup

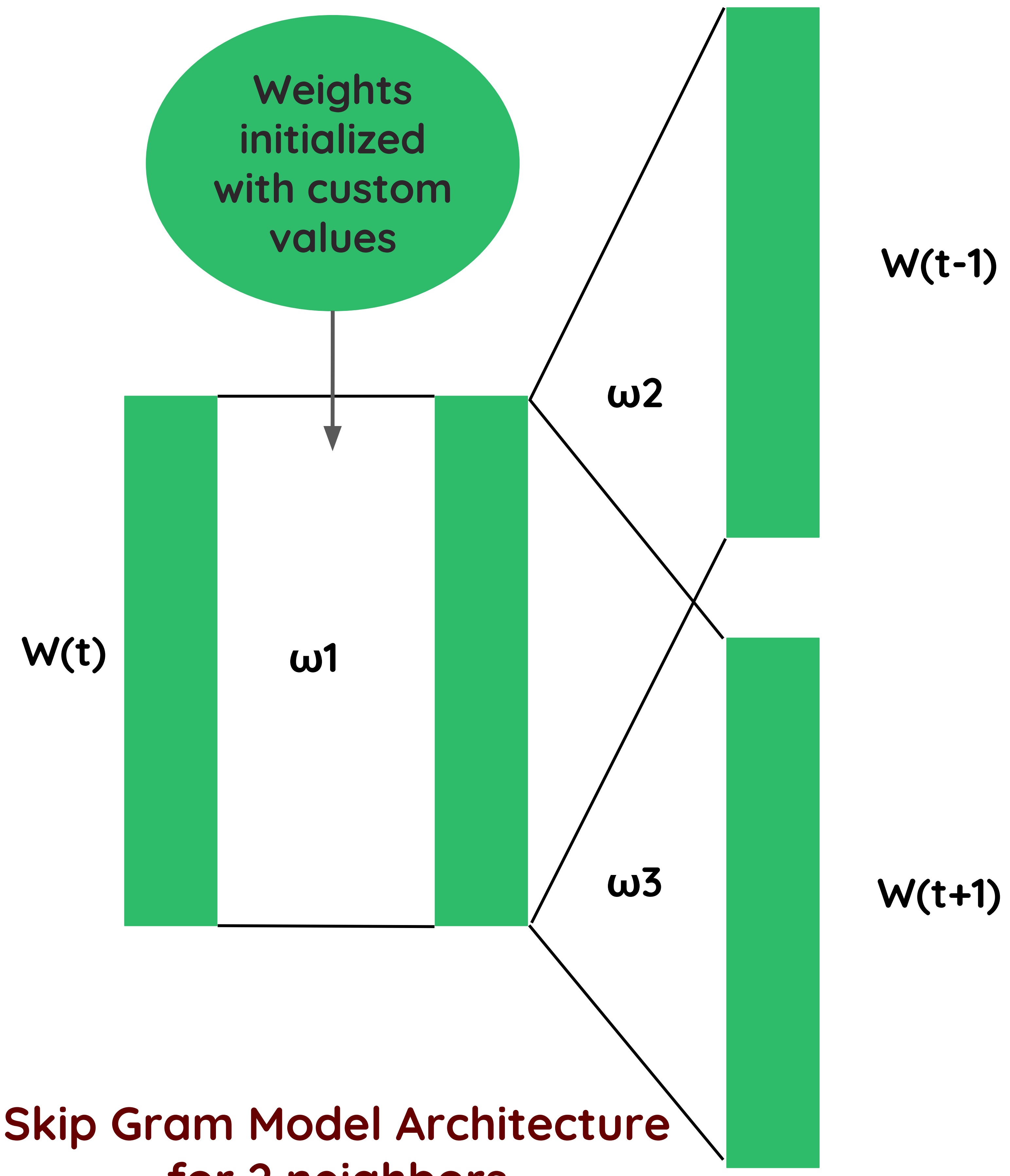
Clustering phrases extracted from raw text in such a way that semantically similar phrases are grouped together



Phrase And Text Cleanup → Phrase Representation Model → Phrase Clustering

Word2Vec Skip Gram with custom weight Initialization

- Create a copy of the data with phrases in each sentences replaced by a single entity
  - 'I love New York' → 'I love New-York'
- Equate corresponding sentences in each dataset
  - Average embedding("**I love New York**") = Average embedding("**I love New-York**")
  - Extract phrase embedding by using word2vec embeddings for all words and treating the phrase as an unknown
- Train a skip-gram model on the hyphenated dataset, with word embeddings initialized with Google Skip Gram embeddings and phrase embeddings initialized with the extracted values



Skip Gram Model Architecture for 2 neighbors

Sample Resultant Clusters

Occasions	Food
Nice Wedding	*Dried Bread*
Rememberance Day	*Strawberry jam*
Birthday Party	*Honey Sauce*
Mothers Day	*Lemon Juice*
Great Christmas	*Ground Beef*
Locations	**Transportation**
Medical District	*Black Taxis*
Drum Tower	*Land Cruiser*
Bomb Shelter	*Limo Ride*
National Forest	*Bus Coach*
Pall Mall	*Renting Bikes*

Future Work

- Translate the idea of equating sentences into a deep learning model
- Prepare an evaluation criterion for phrase clusters