

# CS 410 Team Progress Report

## 1. Progress made thus far

The “Article Summarizer” summarizes one to two pages of articles into a few sentences by discarding redundant information and preserving important content. The plan is to use two approaches, *Extractive Text Summarization*, and *Abstractive Text Summarization*. So far, Donghyeon Jeong (djeong20) implemented the extractive text summarization method. Extractive based summarization method selects the words with the most important phrases which best represent a summary. This could be achieved by following the steps.

1. Word vectorization (word2vec)
2. Create a similarity matrix based on the word vector
3. PageRank algorithm for ranking.

The summarized version of the article is successfully generated using this method.

### Sample article from *New York Times*

It's a story President Joe Biden tells at nearly every opportunity: last year, meeting his new counterparts at his first international summit, he proudly informed them, “America is back.” “For how long?” one of them asked. As Biden departs this week for a weeklong around-the-world trip, the question still resonates. “If the United States tomorrow were to, quote, withdraw from the world, a lot of things would change around the world. A whole lot would change,” Biden said ahead of his trip. Biden hopes his stops at a climate meeting here on the Red Sea, a gathering of Southeast Asian nations in Cambodia and a high-stakes Group of 20 summit on the Indonesian island of Bali will assert American leadership in areas former President Donald Trump either ignored or actively shunned. Four defining global threats will loom over Biden's trip: Russia's war in Ukraine, escalating tensions with China, the existential problem of climate change and the potential for a global recession in the coming months. Other flashpoints, like North Korea's rapidly accelerating provocations and uncertainty over Iran's nuclear program, will also factor in. Of those, defending Ukraine and combating climate change could be the most impacted by results from this week's election. At moments of domestic political turmoil, US presidents have often turned to foreign policy, where they can act with relatively few congressional restraints. President Barack Obama launched a similar tour of Asia after his self-described “shellacking” in the 2010 midterms. Biden and his advisers believe they are entering the series of high-stakes meetings with a solid argument that his version of the US role in the world will endure. He resisted historical and political headwinds in this year's midterm elections while many of Trump's handpicked candidates lost. And over the past year, he secured passage of a major climate investment and rallied the world behind efforts to support Ukraine and isolate Russia. Yet the anxieties of American allies persist over the future of US commitments – to Ukraine, to fighting climate change, to treaty partners and, perhaps most urgently, to upholding Democratic norms. Foreign diplomats have watched intently as the midterm political season played out, searching for clues to how the American electorate was judging Biden's first two years in office and reporting back to their capitals on voter dissatisfaction that could fuel Trump's return to office. As of Wednesday night, Republicans appeared to be moving toward gaining control of the House of Representatives. And Trump is readying a third presidential bid, potentially to be announced while Biden is on the opposite side of the planet.

### Summarized article - Selected Top 5

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## 2. Remaining tasks

There are several remaining tasks to complete.

1. Implement abstractive text summarization - identifies important sections, **interprets the context**, and generates a summary.
2. Generate multiple summarized article results from numerous articles. So far, the extractive article summarizer is tested in a limited number of articles.
3. Compare, evaluate, and analyze the result from extractive-based and abstractive-based summarization.

## 3. Any challenges/issues being faced.

There are a few challenges to address.

1. Evaluation methods: We initially set the evaluation methods to be human users. However, this cannot be the case of handling a massive number of articles.
2. Parameter K tuning: Extractive summarization requires the user to set a number of top K sentences to extract. Having the same constant for every article could possibly impact the output result. For instance, an article with many important contents or long documents should require a larger K value than shorter documents. If not, many important information could be discarded

The challenges mentioned above are expected to be resolved by the end of the project.