# **BUSINESS NEWS** RECESSION LOSES GRIP

#### OIL PRICES RISE

an unprecedented pace as oil climbed

another \$2 per barrel yesterday.

As markets worldwide shudder with every price move, leaders of the industrialized nations urged calm

industrialized nations urged calm amidst prices that seemingly have no ceiling.

In a statement from the nation's capitol, the President of the United States declared that stable oil prices were not only in the best interests of the oil importers of the world, but also in the best interest of the oil ex-rorters as well. porters as well.

Oil has been on a steady price rise since last fall when it was an-nounced that demand had increased sharply in the developing nations of the world, most notably in China and

However, with demand seeming to slow in the developed nations of the world, it has done little to domeen

#### DRUG COS. PROFITS UP

Profits of drug companies seem to be bucking the general trend of the market. With nearly one-half of all pharmaceutical companies reporting earnings, 30% of those reporting beat expectations.

#### AUTO INDUSTRY TO OFFER INCENTIVES.

Prices are being reduced and incentive are increasing as the nation's auto industry continues to try and lure shoppers back in domestic cars and away from a long term trend towards purchasing imports.

#### WAGES INCREASING

Wages of the average worker increased by nearly one-quarter of one percent last month as workers struggled to keep pace with an economy that faces inflationary

#### **GDP POSITIVE**

uct, the most reliable gauge of eco-nomic activity, showed positive growth for the first time in several quarters.

Although job growth has yet to rebound, economic indicators sug-gest that the worst of our economic malaise may be behind us.

malaise may be behind us.

Growth was reported in most secin a life in my my on the sector ledalter deers with a growth of 1.1 percept. The retail sector still reported
negative growth, however.

The U.S. Commerce Department
released the figures days before the
Federal Reserve is scheduled to
convene in the nation's capitot to
determine the latest direction of intcrest rates. Speculation has been
widespread that the Federal Reserve
will be forced to raise rates after a
lengthy series of rate reductions in the
wake of continued economic weakness

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## **News Headline Generation**

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#### Final Project:

INFO 7374 Cognitive Computing and Deep Neural Networks Naini Shah Vighnesh Venkatakrishnan

#### **Overview**

Newspaper plays a significant role in our day to day life. In a news article, readers are attracted towards headline. Headline creation is very important while preparing news. Our goal is to implement text summarization by generating headline for a news body using recurrent neural networks. We attempt to reproduce the results in the paper: Generating News Headlines with Recurrent Neural Networks

#### Goals

- 1) To build a web app prototype that generates headline for a given article using a model trained with variants of RNN (e.g. LSTM) in Keras with gigaword dataset.
- 2) Attempt to find similarity between actual headline and generated headline using cosine similarity
- 3) Try to train the model with data scraped from the internet as suggested in the paper referenced below

#### **Bonus goals (if time permits)**

- 1) Attempt to train the model using other frameworks like PyTorch and compare the generated outputs
- 2) Implement news headline generation for a language other than English
- 3) Try ensembling the deep learning models and check if there is improvement in results

### **Use Cases**

- 1) **Headline generation helper:** Sometimes it is tricky for a person to think of a nice headline, our app could assist the user with that.
- 2) **Attempt to curb click baits:** Sometimes there are misleading links which claim to talk about some news but end up describing something else. Our app can prompt the user before clicking such links.

### **Datasets**

- English Gigaword: <a href="https://catalog.ldc.upenn.edu/LDC2003T05">https://catalog.ldc.upenn.edu/LDC2003T05</a>
- 2. Google News dataset
- 3. Data scraped from reliable news sources

The paper uses English gigaword dataset. We plan to use combination of gigaword and google news.

#### **Process Outline**

- 1. Data Preprocessing
  - Data Cleaning, handling missing values
  - Join the gigaword data and google news data
  - Web scaping data (later)
- 2. Splitting the cleansed data into training and test set
- 3. Building RNN model
- 4. Generate predicted headline
- 5. Build a web app prototype to demonstrate the same
- 6. Deploy web app in AWS (future scope)

#### **Milestones**

Timeframe	Delivery
Week 1 (31 <sup>st</sup> March–6 <sup>th</sup> April)	Project proposal presentation
Week 2a (7 <sup>th</sup> – 9 <sup>th</sup> April) Week 2b (10 <sup>th</sup> –13 <sup>th</sup> April)	Finalize project proposal Data preprocessing
Week 3 (14 <sup>th</sup> -20 <sup>th</sup> April)	Build/Train model and keep web app prototype ready
Week 4 (21 <sup>st</sup> -27 <sup>th</sup> April)	Implement cosine similarity and work on future scope if time permits

## **Deployment Details:**

- 1) Language: Python 3.6
- 2) Cloud Tools/Platforms: AWS EC2
- 3) Development Environments: Jupyter Notebook
- 4) Packages/ Frameworks: Keras

## **User Interface Design Plan**

#### **NEWS HEADLINE GENERATION**

Insert Headline:		
Insert news body:		
		GENERATE HEADLINE
Generated Headline:	<< label >>	
Cosine Similarity:	<< label >>	

## **Reference and Sources:**

- 1. <a href="https://arxiv.org/pdf/1512.01712.pdf">https://arxiv.org/pdf/1512.01712.pdf</a>
- 2. <a href="https://github.com/fchollet/deep-learning-with-python-notebooks/blob/master/8.1-text-generation-with-lstm.ipynb">https://github.com/fchollet/deep-learning-with-python-notebooks/blob/master/8.1-text-generation-with-lstm.ipynb</a>
- 3. <a href="https://github.com/udibr/headlines">https://github.com/udibr/headlines</a>
- 4. <a href="https://github.com/kabrapratik28/DeepNews">https://github.com/kabrapratik28/DeepNews</a>