

Real/Fake News Prediction

NLP CLASSIFICATION – P252

Internship - Project

By Excelr with AI Variant



Meet Our Team

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CONTENTS

- OBJECTIVES
- ABSTRACT
- PROJECT TIMELINE
- PROJECT LIFECYCLE
- INTRODUCTION
- PROBLEM STATEMENT
- SOLUTION OVERVIEW
- APPROACH AND METHODOLOGY
- LIMITATIONS
- BENEFITS AND INSIGHTS
- FUTURE ENHANCEMENTS
- CONCLUSION
- SYSTEM REQUIREMENTS



OBJECTIVES

- **This dataset consists of about 40000 articles consisting of fake as well as real news. Our aim is train our model so that it can correctly predict whether a given piece of news is real or fake. The fake and real news data is given in two separate datasets with each dataset consisting around 20000 articles each.**
- Business Objective:
- Need to classify the fake and real news accurately.
- Architecture level analysis:
- Data transformation/Text processing using R/Python
- Need to get sentiments Analysis and n-gram analysis with some charts like histogram, Density plot, barplot , pie-plot etc.
- Deployment through R Shiny/Flask/Streamlit.



ABSTRACT

- Ever wonder if a news article is real or fake? Ever wonder how to recognize real news from fake news?
- The spread of fake news is a major problem in society today and detecting such fake news is vital. How can we detect fake news you ask? With machine learning The effects of fake news on social media can be Destabilizing. - Fake news can be used to sow discord and division among people, and to undermine trust in institutions. Harmful. - Fake news can have a negative impact on people's health, finances, and safety. For example, fake news about the COVID-19 pandemic has led to people refusing to get vaccinated, which has put them at risk of getting sick. Dangerous. - In some cases, fake news has been used to incite violence or hatred. For example, in India, fake news stories about religious minorities have led to mob violence.
- Thus, for purposes of detecting fake news from real news, we used ML algorithms to help predict fake news from real news. Join us on this journey to help identify fake news.

PROJECT TIMELINE

- EDA
- Data Cleaning
- Data Redundancy
- Null Values
- Duplicate Values

- Word Count
- N-grams
- Model Evaluation
- Model Selection
- Feedback

..... week1>

..... week2>

..... week3>

..... week4>

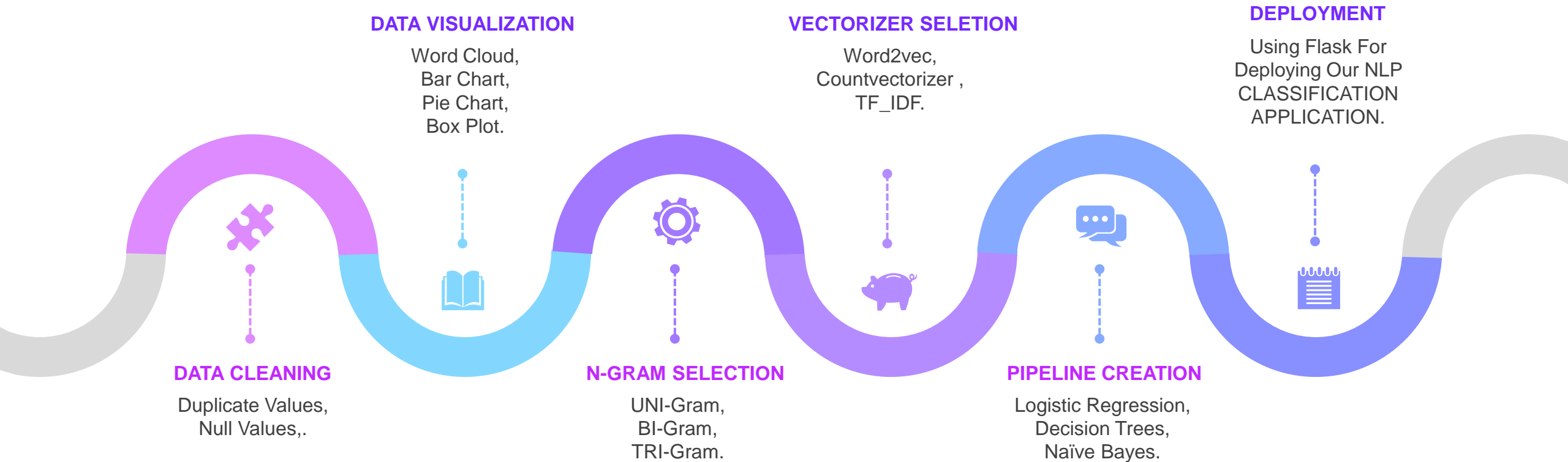
..... week5>

- Project Kickoff Meeting
- Objective Discussion
- Dataset Details

- Presentation
- Portfolio
- Simple Portfolio
- Modern Portfolio
- Presentation

- Model Building
- Pipeline Creation
- Deployment
- Testing
- Presentation

PROJECT LIFECYCLE





INTRODUCTION

Welcome, everyone! Today, I'm thrilled to introduce "FactDetective," an innovative application dedicated to unraveling truth and deciphering fact from fiction. In an era dominated by misinformation, FactDetective utilizes cutting-edge technologies like Natural Language Processing (NLP) and machine learning to uncover the authenticity of information. By employing sophisticated algorithms and intelligent text analysis, FactDetective equips users with the tools to make informed decisions based on verified facts. With its intuitive interface and powerful features, FactDetective empowers individuals to navigate the vast realm of information with clarity and confidence. Thank you for joining us, and get ready to embark on a truth-seeking mission with FactDetective.



PROBLEM STATEMENT

- The rise of social media and digital platforms has made it increasingly challenging to distinguish truth from fiction.
- Misinformation can have severe consequences, leading to the spread of falsehoods, erosion of trust, and social polarization.
- The rapid dissemination of news articles on various platforms has increased the risk of misinformation and fake news.
- Our objective is to develop a web application that can classify news articles, providing users with a tool to assess the credibility and potential bias of the information they encounter.



SOLUTION OVERVIEW

- FactDetective is the answer to this pressing need. It leverages advanced technologies like Natural Language Processing (NLP) and machine learning to uncover the truth and detect misinformation.
- Our web application harnesses the power of intelligent algorithms and linguistic analysis to analyze textual information, enabling users to verify the authenticity and credibility of news articles, social media posts, and other online content.



APPROACH AND METHODOLOGY

- We have implemented a multi-step approach for our NLP News Analyzer, Data Collection, Gathered a diverse dataset of news articles spanning different sources and topics.
- Preprocessing: Cleaned and processed the text data, including techniques like tokenization, stopwords removal, and lemmatization.
- Feature Extraction: Utilized TF-IDF vectorization to convert the text into numerical features for model training and prediction.
- Model Training: Employed logistic regression, a powerful classification algorithm, to train our model on labeled data.
- Flask Web Application: Built an interactive web app using Flask to make the model accessible to users.



LIMITATIONS

- It's important to acknowledge that news is a dynamic domain, and the limitations of our logistic regression model include, Evolving Language, News articles often include new or trending terms, which may not be adequately captured by the model's existing vocabulary.
- Contextual Bias: The model may struggle to account for subtle contextual nuances and potential bias that can emerge from current events or changing societal dynamics.
- Data Timeframe: The model's training data may not include the most recent news articles, potentially impacting its accuracy in classifying current news content



BENEFITS AND INSIGHTS

- Despite the limitations, the NLP News Analyzer offers several benefits and insights, Increased Awareness, Users gain awareness about potential bias, credibility, and sentiment associated with news articles.
- Enhanced Critical Thinking: The tool encourages users to approach news content with a critical mindset, making more informed judgments.
- Analytical Support: Users can access valuable insights to aid their decision-making processes based on the classification results



FUTURE ENHANCEMENTS

- To address the limitations and improve the NLP News Analyzer, future enhancements may include Continual Model Training, Regularly updating the model with the latest labeled data to adapt to evolving language and contextual biases.
- Real-time Data Integration: Incorporating real-time data sources to capture the most recent news articles and enhance the model's accuracy.
- Advanced NLP Techniques: Exploring advanced NLP techniques, such as deep learning models or ensemble methods, to improve classification performance.



CONCLUSION

- Our NLP News Analyzer is an important step towards empowering users to critically assess news articles and make informed decisions.
- While acknowledging the limitations, we remain committed to continually improving the model and web application to provide a more comprehensive and reliable news analysis tool.

SYSTEM REQUIREMENTS

HARD DISK

EMPTY SPACE UPTO
1GB.

OPERATING SYSTEM

WINDOWS 10/11.

IDE

VISUAL STUDIO CODE,
ANACONDA SPYDER

RAM

Minimum : 8GB
Maximum : 16GB

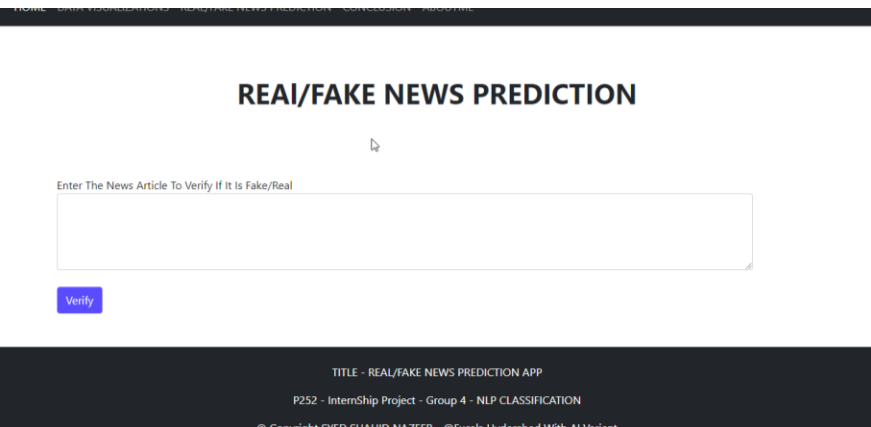
PROCESSOR

INTEL i5,i7,i9
AMD RYZEN 5,7,9.

WEB BROWSER

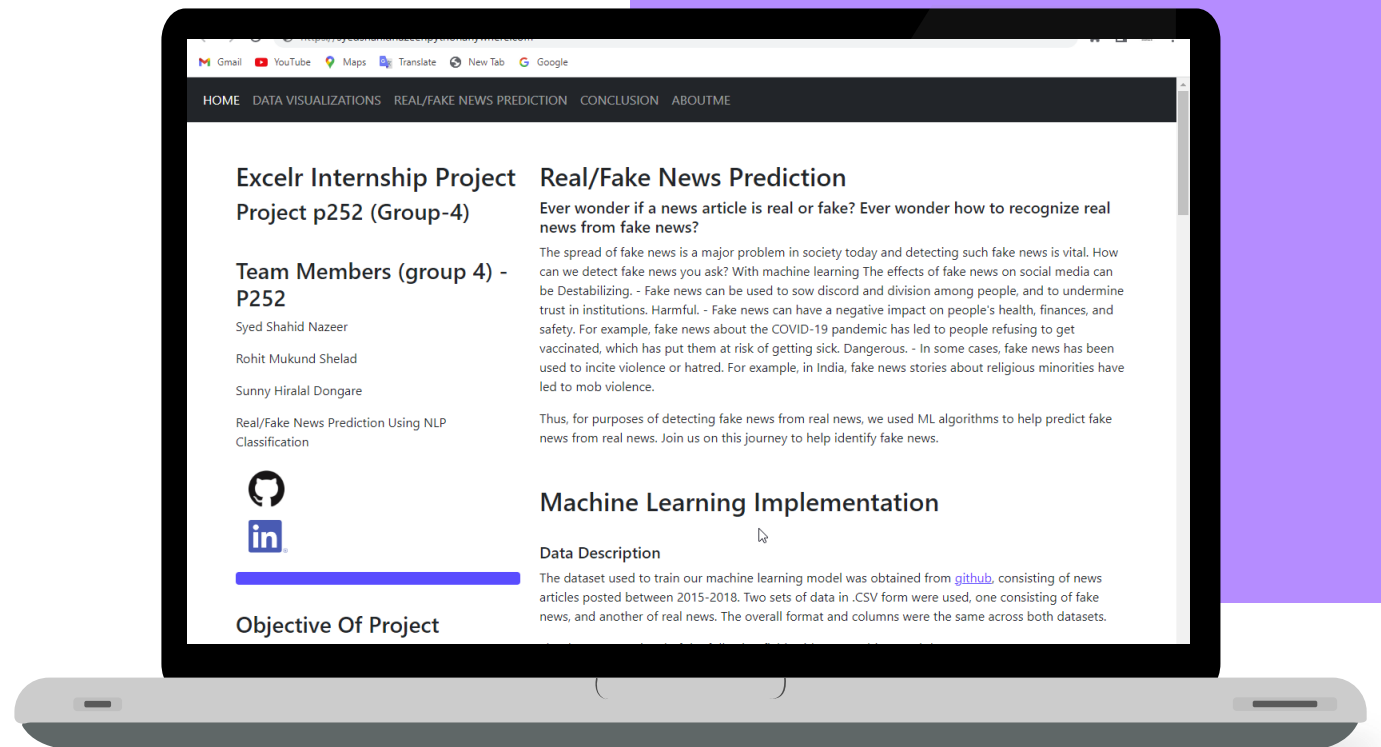
CHROME,
MICROSOFT EDGE.



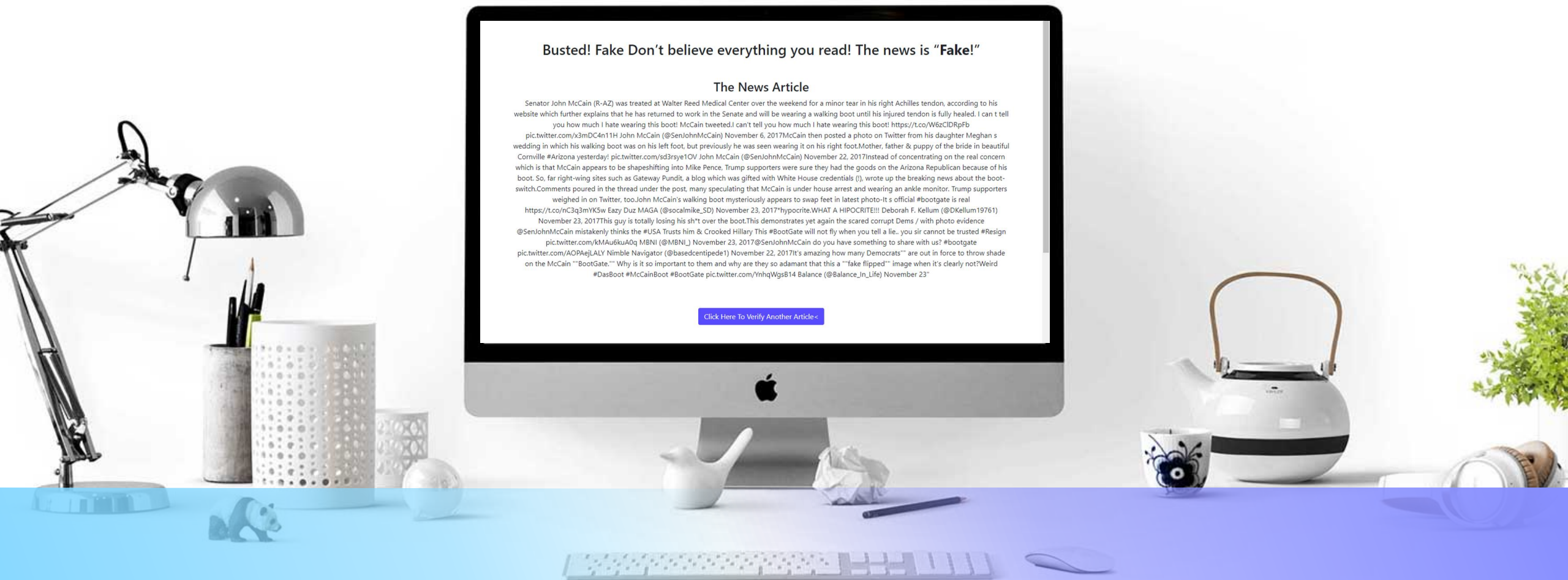


FLASK WEB APP- FakeDetective

HOME PAGE
DATA VISUALIZATIONS
REAL/FAKE NEWS PREDICTION
CONCLUSION
ABOUTME



PREDICTION SAMPLES –FAKE NEWS



Busted! Fake Don't believe everything you read! The news is "Fake!"

The News Article

Senator John McCain (R-AZ) was treated at Walter Reed Medical Center over the weekend for a minor tear in his right Achilles tendon, according to his website which further explains that he has returned to work in the Senate and will be wearing a walking boot until his injured tendon is fully healed. I can't tell you how much I hate wearing this boot! McCain tweeted. I can't tell you how much I hate wearing this boot! <https://t.co/W6zCIDRpFb> pic.twitter.com/x3mDC4n11H John McCain (@SenJohnMcCain) November 6, 2017 McCain then posted a photo on Twitter from his daughter Meghan's wedding in which his walking boot was on his left foot, but previously he was seen wearing it on his right foot. Mother, father & puppy of the bride in beautiful Cornville #Arizona yesterday! pic.twitter.com/sd3rsye1OV John McCain (@SenJohnMcCain) November 22, 2017 Instead of concentrating on the real concern which is that McCain appears to be shapeshifting into Mike Pence, Trump supporters were sure they had the goods on the Arizona Republican because of his boot. So, far right-wing sites such as Gateway Pundit, a blog which was gifted with White House credentials (!), wrote up the breaking news about the boot-switch. Comments poured in the thread under the post, many speculating that McCain is under house arrest and wearing an ankle monitor. Trump supporters weighed in on Twitter, too. John McCain's walking boot mysteriously appears to swap feet in latest photo-It's official #bootgate is real <https://t.co/nC3q3mYKSw> Eazy Duz MAGA (@socalmike_SD) November 23, 2017 *hypocrite. WHAT A HIPOCRITE!!! Deborah F. Kellum (@DKellum19761) November 23, 2017 This guy is totally losing his sh*t over the boot. This demonstrates yet again the scared corrupt Dems / with photo evidence @SenJohnMcCain mistakenly thinks the #USA Trusts him & Crooked Hillary This #BootGate will not fly when you tell a lie.. you sir cannot be trusted #Resign pic.twitter.com/kMAu6kuAQ MBNI (@MBNI_) November 23, 2017 @SenJohnMcCain do you have something to share with us? #bootgate pic.twitter.com/AOPAejLALY Nimble Navigator (@basedcentipede1) November 22, 2017 It's amazing how many Democrats are out in force to throw shade on the McCain ""BootGate."" Why is it so important to them and why are they so adamant that this a ""fake flipped"" image when it's clearly not? Weird #DasBoot #McCainBoot #BootGate pic.twitter.com/YnhqWgsB14 Balance (@Balance_In_Life) November 23"

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PREDICTION SAMPLES –REAL NEWS



Verified! The news is “Real!”

The News Article

WASHINGTON (Reuters) - U.S. Senate Majority Leader Mitch McConnell on Friday said a shifting landscape will lead him to work with Democrats on immigration and financial regulation early in the new year, following a year of acrimony and partisan legislation. In an end-of-year news conference, McConnell touted a list of Republican accomplishments since President Donald Trump took office in January. It started with the confirmation of Neil Gorsuch to the Supreme Court and ended with an overhaul of the U.S. tax code. But in January, McConnell's already razor-thin 52-48 Republican majority will shrink to 51-49 with the swearing in of Senator-elect Doug Jones, the Democrat who surprised the political world with a win in a special election in the deeply Republican state of Alabama. Adding to McConnell's difficulties, special Senate procedures are fading that allowed him to pass a tax bill and try to repeal the Affordable Care Act this year without any Democratic support. That means that McConnell's victories - if he has them - will require more collaboration and less confrontation. The pivot was the centerpiece of his news conference remarks. ¶ There are areas where I think we can get bipartisan agreement. ¶ McConnell said. First on his list was legislation to change Dodd-Frank banking regulations that he said would help smaller financial institutions. The Kentucky senator noted that Senate Banking Committee Chairman Mike Crapo has advanced legislation that is co-sponsored by several Democrats. McConnell also pointed to bipartisan efforts to help undocumented immigrants, known as “Dreamers,” who were brought into the United States when they were children. If negotiators from both parties can come to a deal for the Dreamers that Trump's administration can support, “we’ll spend floor time on that in January,” McConnell said. On Thursday, Senate Democratic Leader Chuck Schumer complained that throughout 2017 Republicans “have been hell-bent on pursuing a partisan agenda.” When asked by a reporter of possible bipartisan successes in 2018, Schumer pointed to the need for infrastructure improvements but said that Trump has been “all over the lot” on how to accomplish road, airport and other construction projects. With the November 2018 congressional elections approaching, Democrats might have less incentive to cooperate with Republicans, especially after Schumer's party won decisive victories in special elections this month and last in Alabama and Virginia, McConnell hinted it would be tougher to find agreement with Democrats on some other legislative issues, including welfare reform, which Trump says he wants to push ahead with in 2018. McConnell said he would consult with Trump and House of Representatives Speaker Paul Ryan in January over prospects for welfare reform.

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THANK YOU

YOUR'S HONESTLY SYED SHAHID NAZEER

Looking forward to further conversations and collaborations.

