

**Asia Pacific College**

**School of Computing and Information Technology**

**Magallanes, Makati City**

**IDENTIFYING FAKE NEWS IN FACEBOOK**

**Project Documentation Submitted**

**To the Faculty of School of**

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# Abstract

This document circles around fake news on the internet. Defining what fake news really is and how us people should deal with it whenever we get to encounter them on the internet, most likely in the social media. In this research the researchers will identify fake news and differentiate it from authentic news in Facebook. The researchers will also discuss the effects of it in our daily lives and in our society. Considering that there’s a lot of various ways on identifying fake news, this document will be providing conclusions and recommendations that we could follow on identifying fake news.

KEYWORDS: Fake news, svm, classification

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# Introduction

## **Project Context**

Fake news is a deliberate misinformation or hoax that spreads via traditional print, broadcast news media or online social media (Novotny, 2017). It misleads people and make the world less informed. It harms the community and the industry in an alarming level (Stecula, n.d.).

Eric Trump, the son of Donald Trump, tweeted an article about paid protestors from the domain “abcnews.com.co” that reinforced right wing conspiracy theories. The article was completely fabricated, but it resembled the real ABC News enough to fool those who weren’t paying attention (Palmisano, 2016). With the way on how fake news is spreading, it would be ideal to have application that help identify fake news online.

## **Purpose and Description**

The main purpose of this project is to prevent online users from being tricked by fake news. The proponents will be using Support vector machine algorithm for classifying. SVM is a supervised machine learning algorithm for classification or regression problems where the dataset teaches SVM about the classes so that SVM can classify any new data. It works by classifying the data into different classes by finding a line (hyperplane) which separates the training data set into classes. As there are many such linear hyperplanes, SVM algorithm tries to maximize the distance between the various classes that are involved and this is referred as margin maximization. If the line that maximizes the distance between the classes is identified, the probability to generalize well to unseen data is increased.

## **Objectives**

The objectives of this study are:

1. To create a classification model that determine whether a link leads to a fake news article or not.
2. To create a web extension for Facebook that can identify whether a link clicked by a user leads to a fake news article or not.

## **Scope and Limitations**

The study focuses on identifying fake news in Facebook using SMV algorithm. This study will cover Facebook and fake news links.

# Review of Related Literature

**Identifying Fake News using classifier**

According to Conroy et al. (2015), classifiers are useful for automated numerical analysis. One common example of classifiers is Support Vector Machines (SVM). It shown high accuracy results in classification. It provides a basis for the design of a comprehensive fake news detection tool. Using classifier the accuracy which measures the number of articles correctly classified as real or fake.

# Technical Background

**Support Vector Machine**

Support vector machine are good at solving problems. It is used computational biology due to their high accuracy, the ability to deal with large datasets, and the flexibility in modeling different sources of data. These are controlled learning models used for analyzing data and for its classification and regression analysis using sorting algorithms. Support vector machines use its ability to create forecasts based of the given set of data (Ben-Hur et al., 2008). It is also used for specific tasks such as classification of data and analysis. SVM used for sentiment analysis of opinion mining is directly focused on two things: classifying and forecasting. The support vector machine will be able to identify new inputs to the model and then designate each input to its rightful category just as how it processes previous ones. The application of SVM ranges from text categorization, image segmentation, hand-written character recognition (Jadav et al., 2016). The researchers will use SVM to identify fake news and real news in Facebook and it will prove its accuracy.

# Design and Methodology

A web extension is a plug-in that extends the functionality of a web browser. The researchers will create a web extension that can identify fake news and will only run if the link is clicked in Facebook. When the link is clicked, the system will compare the fake news link from the list of fake news links gathered by the team. The data will be gathered from kaggle.com, CBCP(Catholic Bishops' Conference of the Philippines ) and Primer.com . If the link is not in the list, the system then will get the data from the link to compare the following:

* **author**: author of story
* **title**: title of story
* **site\_url** : link
* **likes**: number of Facebook likes
* **comments**: number of Facebook comments
* **shares**: number of Facebook shares

If the author is unknown the system will automatically flagged it as fake. If the link is confirmed fake the system will notify the user with a dialog box popped up, but if the link article is authentic the system will also notify the user.

The extension will be developed using HTML, CSS and JavaScript and it will be compatible to Google Chrome.

# Conclusions and Recommendation

Fake news can be lessened or better yet eliminated, since people keep falling prey for such posts; it needs to be stopped. This paper is meant to do just that; the program we are proposing is meant to detect if the news posted in your social media websites, which would literally get marked as a fake if it is one. To identify a fake news one must check the author, URL, title, number of likes, number of shares and number of comments. This program will be a plugin for the users’ internet browsers, but will only work for Facebook, and will not detect if posted news are fake from other websites. If this program could be implemented, there will definitely be a big change in how news would be spread, since users will no longer fall for faulty news articles and posts.

The researchers will use SVM algorithm for classifying whether the news is fake or not. SVM uses a technique called the kernel trick to transform the data and then based on these transformations it finds an optimal boundary between the possible outputs. Simply put, it does some extremely complex data transformations, then figures out how to seperate your data based on the labels or outputs you've defined.

# Appendices

The steps to perform data classification using Support Vector Machine algorithm are as

follows:

Step1: Define a set of n data points in an array say

X= array([[x11, x21], [x12, x22], ....... [x1n, x2n]])

Step2: Define class of each data point in a vector of list type say Y = [-1, -1, -1 .....1, 1, 1]

Step3: **F**it the SVM model using the statements

clf = svm.SVC(kernel='linear') and clf.fit(X, Y)

Step4: Get the separating hyperplane xx as x1 coordinates anf yy as x2 coordinates

w = clf.coef\_[0]

a = -w[0]/w[1]

xx = np.linspace(-1, 8, 10, 1)

yy = a\*xx - (clf.intercept\_[0])/w[1]

Step5: Get the parallels to the separating hyperplane that pass through the support vectors

b = clf.support\_vectors\_[0]

yy\_down = a\*xx + (b[1] - a\*b[0]) (positive support plane)

b = clf.support\_vectors\_[-1]

yy\_up = a\*xx + (b[1] - a\*b[0]) (negative support plane)

Step6: Plot the line, the points, and the nearest vectors to the plane using appropriate python commands

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