The document contains our entry for the IBM Bright ICT BlueMix competition held at the 2016 AIS Student Leadership Conference. We chose to help prevent cyber bullying on social media by developing a solution using a cyber detection model leveraging IBM Bluemix and Watson cognitive components.
Table of Contents

I. Project Member Introduction 2
II. Societal Problem: Cyber Bullying on Facebook 2
III. Product Roadmap 3
IV. Our Model 4
   A. Submission Notes 4
V. PowerPoint Slides 6
“Bully Be Gone” Project Members

**Nam Nguyen: Project Team Lead**

Nam coordinates all efforts between members and facilitates road blocks in project. He organizes the ideas of members into tangible actions and provides business research. He is a graduate student pursuing his Master’s of Business Administration with portfolio work relating to the social media industry.

**Peter Cavallaro: Developer**

Peter is responsible for the development and design of our alpha code and systems flow. He is an undergraduate student pursuing a Bachelor’s in Management Information Systems.

**Neil Light: Advisor**

Neil is responsible for help generating ideas for our project and advises on program implementation. He is an experienced computer programmer and an undergraduate student pursuing a Bachelor’s in Management Information Systems.

**Societal Problem: Cyber Bullying on Facebook**

Cyber bullying is prevalent on the Internet and online communities, such as Facebook. The spread of verbal abuse can cause harm to minors and adults, possibly suicide. We envision detecting and ridding all instances to cyber bullying, starting with social media on Facebook.

Our approach is to proactively protect social media users from cyberbullying through the use of big data analytics. We will use IBM Watson and other Bluemix components to implement a cyberbullying detection system that could notify their parents. Many times, loved ones of the victim are unaware of the cyber bullying occurring to their loved ones until it is too late. The victims sometimes do not inform parents, family, or friends about the bullying and may possibly delete the harmful content before it is known or discovered.

Our goal is to come up with a solution for loved ones to catch the cyber bullying before it becomes a problem by having the ability to monitor and analyze posts on Facebook. There is current research into developing a cyber detection system model in 2013 called “An Effective Approach for Cyber Bullying” by the University of Queensland. Our project provides a solution to the first step into categorizing offensive terms found on social media proposed by the academic literature.
Product Roadmap

In our alpha submission, we constructed a method for a Facebook user to conduct a sentiment analysis to detect potentially harmful posts from their own posts on their “Facebook Wall”. We like to use IBM Bluemix as a platform to process many posts to help detect and identify potentially harmful posts. We would like to explain our components below:

- **Facebook API Graph**: The API extracts text from a Facebook’s profile using a python script to convert into XML file format to be read. Currently, a user authentication token is required to run the python script successfully.

- **Alchemy API**: The API is used to process text into positive or negative sentiments and tags text into concept categories with a percentage relevance.

- **Report**: After Alchemy API processes the text, a report is generated with the text analyzed along with concepts associated. It is our goal to organize this information into a push notification delivery component in our beta submission that is useful to parents and loved ones.
Our Model

In our current model, the cyber bullying detection and notification system would work in the following steps:

1. Content accumulates on a Facebook user’s page.
2. The python script, using Facebook Graph API, extracts text from the Facebook’s user page and converts text into an XML format.
3. The “Bully Be Gone” python script sends a sentiment analysis request through Alchemy API to analyze text in XML format using machine learning to analyze natural language processing.
4. The output is sent to a database. We would like to leverage IBM Bluemix for this component, but is currently absent.
5. The database generates a report of concepts processed and analyzed by Alchemy API into a report.
6. The report is then sent to parents via push/e-mail notification or an android app.

Future Process

It is our hope to expand the analysis beyond text to audio and visual content, such as video and images, using Watson cognitive API’s. Our current submission only analyzes text information.
Submission File Notes

- **bbg_py**: Bully Be Gone python script sending sentiment analysis request.
- **fb_scraper_py**: Facebook API Graph text extraction script. User authentication token needed to run script currently.
- **102745130099270_facebook_statuses**: XML document with text used for alpha submission
“Bully Be Gone!” (BBG)

UNIVERSITY OF WEST FLORIDA

BY NAM NGUYEN, NEIL LIGHT, PETER CAVALLARO
Vision & Mission

• Our vision is to detect and rid all instances of cyberbullying.
• Our mission is to proactively protect social media users from cyberbullying through the use of big data analytics. We will use IBM Watson and other Bluemix components to implement a cyberbullying detection system that could notify their parents.
Roadmap

**ALPHA**
- Facebook Graph API
- Pagelld_facebook_statuses.xml
- AlchemyAPI
- Report

**BETA**
- IBM DB2 Database
- Concept Insights
- Personality Insights
- Relationship Extraction
- Natural Language Classifier
- Android App
- Push Notification Delivery
System Flow Diagram

Bully → Tags user in abusing post → User

BBG
System Flow Diagram

Bully

Tags user in abusing post

BBG

User

BBG sends sentiment request

AlchemyAPI
System Flow Diagram

- Bully
- User
- BBG
- AlchemyAPI
- SQL Database

- Tags user in abusing post
- BBG sends sentiment request
- Output is dumped into the DB
System Flow Diagram

1. **Bully**
   - Tags user in abusing post

2. **User**
   - BBG sends sentiment request

3. **AlchemyAPI**
   - Output is dumped into the DB

4. **SQL Database**
   - DB2 generates report

5. **Report**
   - DB2 generates report
System Flow Diagram

**Bully**
- Tags user in abusing post

**BBG**
- Sends sentiment request

**AlchemyAPI**
- Output is dumped into the DB

**Parents**
- Email/push notification

**Report**
- DB2 generates report

**SQL Database**