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# CREATING MOBILE AND WEB FILTERED NEWS AGGREGATOR APPLICATION

**Raymond Haryanto[1], Jude Joseph Lamug Martinez[2]**

**[1,2]Computer Science Department, Faculty of Computing and Media, Bina Nusantara University, Jakarta, Indonesia 11480**
**E-mail: [2]jmartinez@binus.edu**

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**Abstract**
The main purpose of producing this application is to provide a news aggregator application which is providing user interface which is different from existing news aggregator application in Indonesia, implementing gamification, and capability of analyzing text and URL. This application is also designed properly based on Shneiderman's Eight Golden Rules of Interface Design and UIX kit which is designed by professional. Besides, this application will have several basic functions of current news aggregator applications that have been researched and there are features that have not been implemented in news aggregator application and upgrades such as URL and text analyzer, real time notification, enhanced user profile page, and gamification integration. Furthermore, there is also a result of the usability survey using SUS questionnaire including the several samples of the survey.

**Index Terms --** Cordova Phone Gap, Fake News Analyzer, Hybrid Programming, News Aggregator, UIX


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## INTRODUCTION

Within the current technological era, the internet is giving massive changes in processing, saving, and distributing information among the residents of Indonesia [1]. The internet is designed to support freedom of speech for each human, so creating websites, blogs, and social media are no longer consider difficult. Through certain tools that were mentioned earlier, writing an article or comment that contains positive and negative sentiments is very accessible. According to Hartono, there are certain impacts of current information technology, such as [1]:

- Trans border data flow
o The stability of economic, security, sovereignty, and culture of the country could be threatened.
- Data Protection and Policy Issues
o Abused and exploited data for the sake of propaganda.
- Copyright
o The evolution of information technology may lead to the escalation of reproducing information.

Those impacts that are caused by technology may worsen if there are false news or most commonly called hoax. According to Cambridge Dictionary, hoax is "a plan to deceive someone, such as telling the police there is a bomb somewhere when there is not one, or a trick:" [2]. The word hoax itself is coming from a word 'hocus' from a mantra 'hocus pocus' which is usually used by a magician to bring some sort of change magically. According to Liputan6 [3], the first hoax that was published and recorded in a book named *Museum of Hoax* is *Isaac Bickerstaff* alias Jonathan Swift's almanac in 1709. The content of that news was telling that an astrology named "John Partridge", this hoax was intended to embarrass his in public. As the result, Partridge stopped creating astrology almanac up to six years. As the time passed, there are a lot of hoaxes spread, even a lot of books contain list of hoaxes are made. On December 2016, a gentleman named Simeon Yates who is Director Institute of Cultural Capital at the University of Liverpool created an article discussing the spread of hoax entitled *'Fake news' – why people believe it and what can be done to counter it.* Inside that article, he mentioned that hoax is spread via a medium where social media is one of it. Moreover, the user of social media has an internet usage pattern where they tend to interact with people with same interest. This habit reflects daily 'offline' bubbles where we agree with people that have the same thought. Besides, in the group of people there would be someone respected as the leader and mostly leader's opinion is trusted by other, although it can be a misinformation.

Before 2017, the movement that has been done by the government of Indonesia was developing Trust+, it is used to prevent and decrease the websites that are spreading negative content such as pornography, spreading hate, SARA, and provocation. Basically, Trust+ is network architecture that has a function to filter all the websites that could be accessed by Indonesian. Kominfo as the representation of Indonesia's government that has the job to filter those websites. Nevertheless, the servers Trust+ itself does not act as Single Gateway for all internet connection in Indonesia, the function of those servers are handling, monitoring, and profiling of all websites. Then, if the website is considered having a possibility of compromising illicit content, the website would be registered inside Trust+ blacklist. Eventually, all the internet service providers need to use the Trust+ database as their filter. Though, this architecture has not filtered the website that is containing false fallacy have not been handled by these systems. [4]

In the beginning of January 2017, according to Jakarta Globe [5], there was an anti-hoax campaign has been done in Jakarta during the car free day, this campaign has been started by one of the organization and supported by Communications and Information Technology. Moreover, the campaign has been continued by another city such as Solo and Surabaya. Currently, there has not been an exact solution toward hoax in Indonesia. Author's team intend to develop an algorithm that may give a solution toward the hoax. Those facts become the motivation for author's team to invent the algorithm that could detect the credibility and the content itself especially article that is using Indonesian as the main language. Then, the algorithm would be implemented in the system that is integrated with the news aggregator application that is going the developed. Though, the main reason for author's team in creating and developing the idea is a fake news or hoax is potentially disrupting national security.

This research aims to design and develop an application that provides reliable contents and encourage users to fight against

hoax by reporting news that they read and find if there is something distrustful and suspicious toward the article. The encouragement would be embodied using gamification system that is being implemented inside the mobile application. Moreover, user is being able to analyze an article or an URL that they think is suspicious using the application that is being supported by an Artificial Intelligence.

**A. Aims**

- Design and develop application based on Shneiderman's Eight Golden Rules of Interface Design.
- Elicit data to support user preference in terms of color combination.
- Validate the user interface experience from UIX professional.

**B. Benefits**

1) User:
- Mobile app friendly application.
- Be able to analyze URL and text, then receive the possibility result of them being a hoax.

2) Another researcher:
- Enhance knowledge toward UI design of news aggregator application
- Give an insight about how author applies gamification toward news aggregator application.

3) Education:
- Introduce cross platform development concepts in the education field.
- Present how gamification could be applied in news aggregator application.

4) The author:
- Deep understanding of Shneiderman's Eight Golden Rules of Interface Design.
- Deep understanding of prototype development methodology as part of software development methodology
- Understanding how to develop a storyboard, mockup, and application testing.

**C. Application Flow**

**a) Mobile Application**

The application will be built using cordova as the development framework by using HTML5, JavaScript, and CSS, it also responsible for providing mobile platform operating system such as android, ios, and windows. It also provides various device APIs, for example; camera, connection, geolocation, etc.
Each page or section in this application will be developed using *handlebarsjs* which is a templating framework that is able to compile all the pages along with the JavaScript file for each page.
The communication between application and server will conduct through ajax to call the APIs. Then, for several data such as user info and user's activity will be saved in user's device.

**b) Web Application**

The Web Application will be able to be accessed once a user shares a link of news that is generated from mobile application. So, the article inside the web cannot be reached directly.

**RESEARCH METHOD**

**A. Survey**

This is survey is conducted to observe people preference toward the news aggregator application that is going to be developed. The content of survey consists of user's color preference toward specific case, user's habit, and user demographic. The total respondents of this survey are exactly one hundred. Hereby, the author attaches the result of the survey including the questions.

**Question 1**: What is your gender?

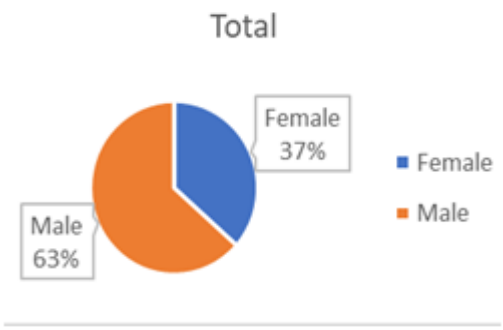



**Figure 1.** Question 1 Diagram

**Question 2**: What color do you think to interpret trustworthiness?

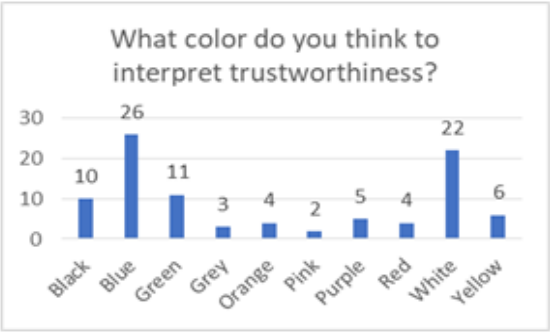



**Figure 2.** Question 2 Diagram

**Question 3**: What color do you think to interpret justice?

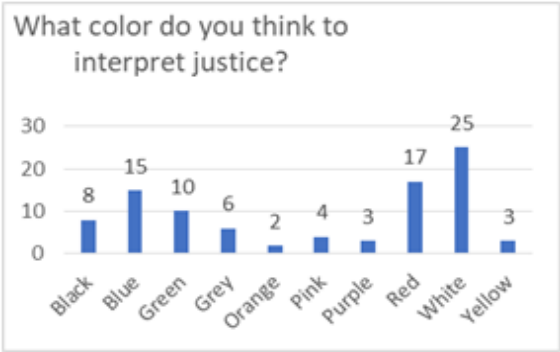



**Figure 3.** Question 3 Diagram

**Question 4:** What color do you think to interpret neutrality?

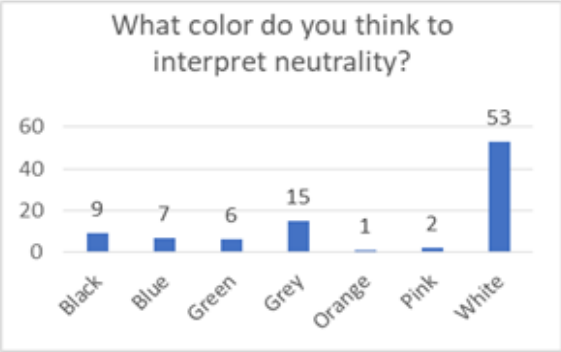



**Figure 4.** Question 4 Diagram

**Question 5**: How old are you?

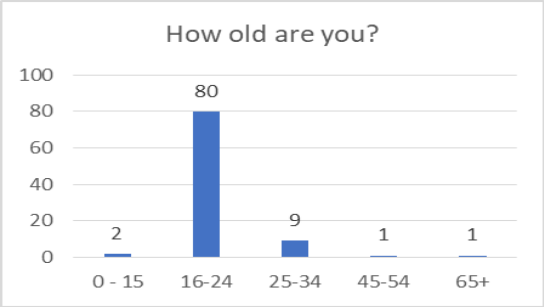



**Figure 5.** Question 5 Diagram

**Question 6**: What kind of gadget do you use mostly in daily basis?

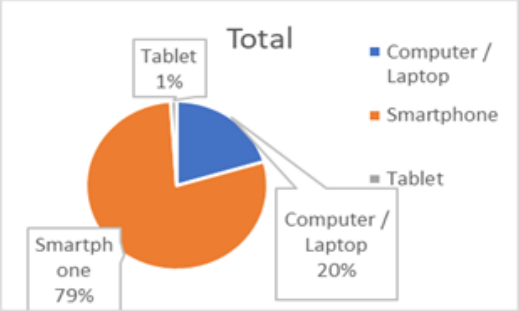



**Figure 6.** Question 6 Diagram

**Question 7**: Which platform do you like to use to read a/an article or news?

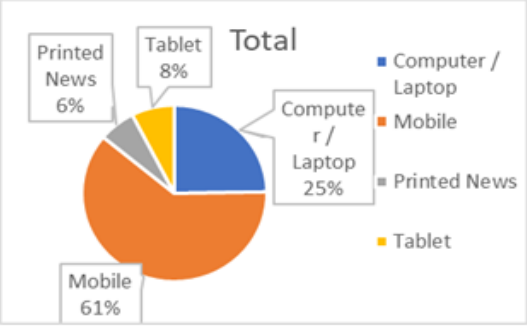



**Figure 7.** Question 7 Diagram

**Question 8**: Do you like to link or login using your social media to other application?

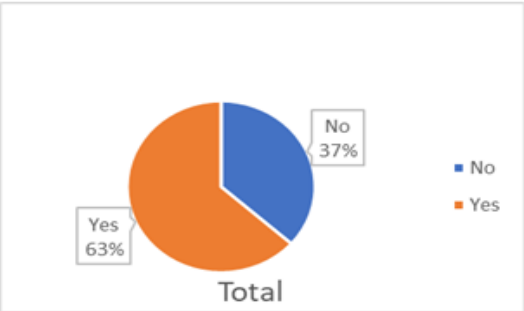



**Figure 8.** Question 8 Diagram

**Question 9**: Have you ever been offered to have personalization while using other portal news or news aggregator application?

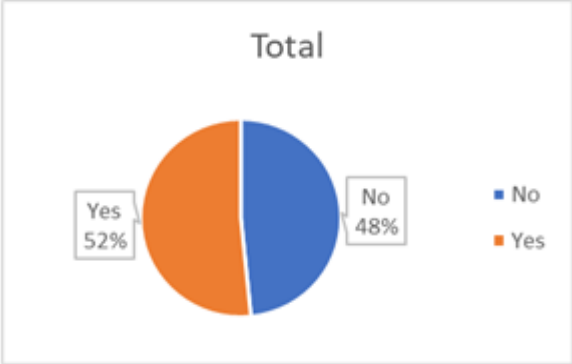



**Figure 9.** Question 9 Diagram

**Question 10**: Have you ever been offered to have gamification while using other portal news or news aggregator application?

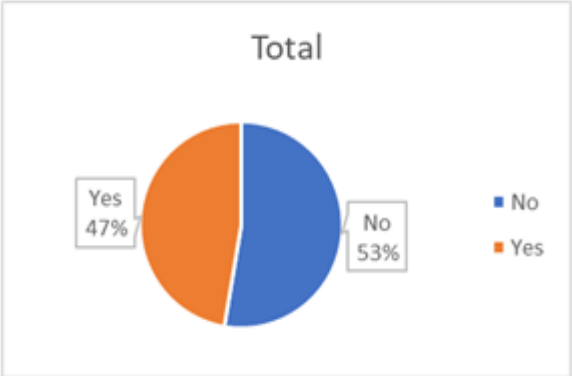



**Figure 10.** Question 10 Diagram

**B. Content Analysis on Existing Applications**

Hereby, I provide the result of my research which is commenced from early February until middle of March toward the five news aggregator application that gets the news by crawling from other sources, there are:

- BABE
- BACA
- MATA
- KURIO
- SCOOP

**AUTHOR'S APPLICATION FEATURES**

**A. Mobile Application**

**Table I.** Mobile Application

| Existing Features | New Features |
|---|---|
| Login & registration using social media | Providing text & URL analyzer |
| Displaying news article | Enhancing user profile page<br>user's comment history<br>user title and level |
| Searching news article | Integrate Gamification<br>- Title<br>- Level |
| Providing user profile page | Providing in app-notification |
| Providing user configuration | |

**B. Web Application**

- User will able to access an exact news from a link which they can get from shareable link generated by the mobile application.
- One Page contains information toward the project and link to download the application.

**Figure 11.** Web Application

**RESULT**

**A. Mobile Application**

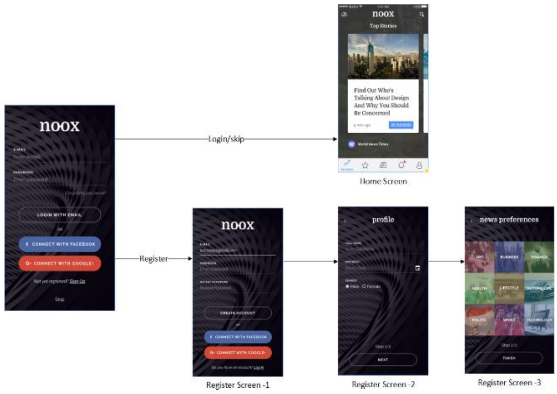



**Figure 12.** Mobile Application

In Fig. 11, the diagram shows a condition where user has been signed in into the application, however Fig. 11 do not contains all the screens because of the page capability. Firstly, user will have five accessible screens through bottom navigation bar in the home screen, then user is able to analyze and search news through "top stories" screen and "for you" screen. If the user access "categories" screen, they will be able to choose one of them, get the news based on selected categories. There is also a notifications screen which is able to give a real-time notification if user's comment has been replied, user's comment has been liked, user's experience point, and lastly user's achievement. Next, there is an article details screen which displays the details of selected news including all the comments of chosen news. Besides, there are several features that are accessible features within in this page, there are application personalization, leaving comment, liking news, and sharing news. And the last one is my profile screen where there are three tabs to display user comment's history, achievements, and liked news. Besides, user is able to access setting page through my profile screen.

In Fig. 12, the diagram shows the flow of user when the first use of the application, at first user will see the login screen, user may log in using the registered email or using their Facebook account. Unless, user need to click "sign up" text and follow the step until the end. However, user does not necessary need to log in to the application although certain features will be disabled if they do not log in.

**B. Web Application**


**Figure 13.** Mobile Web Application


**Figure 14.** Desktop Web Application

Fig. 13 and Fig. 14 are the examples of the pages when the shared link from the application is opened using mobile and desktop browser. This website supports mobile and desktop views which is called responsive website and of course the user interface design is similar to the article details screen in mobile application, so user does not need any learning time to be used to with this website. Once, the mobile application is signed and launched to the Google Play Store, the website has supported the link to the store.

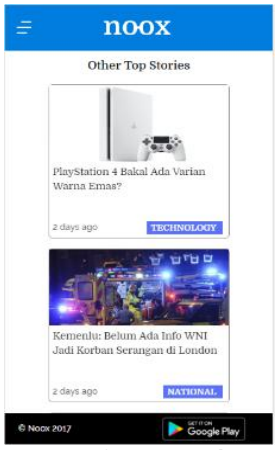



**Figure 15.** Stories Website

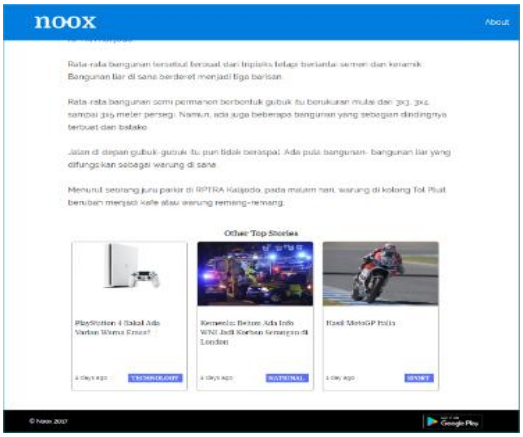



**Figure 16.** Stories Website

Fig. 15 and Fig. 16 show other functionality of the website, where user is able to access other top stories. However, if the user eager to try other functionality they need to download the application.

**PLAY TESTING & SURVEY**

The purpose of having the play testing and survey is to find out end user feedback toward the mobile and web application.

| No | Question | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1 | I think that I would like to use this system frequently | | | | | |
| 2 | I found the system unnecessarily complex | | | | | |
| 3 | I thought the system was easy to use | | | | | |
| 4 | I think that I would need the support of a technical person to be able to use this system | | | | | |
| 5 | I found the various functions in this system were well integrated | | | | | |
| 6 | I thought there was too much inconsistency in this system | | | | | |
| 7 | I would imagine that most people would learn to use this system very quickly | | | | | |
| 8 | I found the system very cumbersome to use | | | | | |
| 9 | I felt very confident using the system | | | | | |
| 10 | I needed to learn a lot of things before I could get going with this system | | | | | |

Gender (Please Select One of them)

| Gender | Thick |
|---|---|
| Male | |
| Female | |

Age (Please Thick One of them)

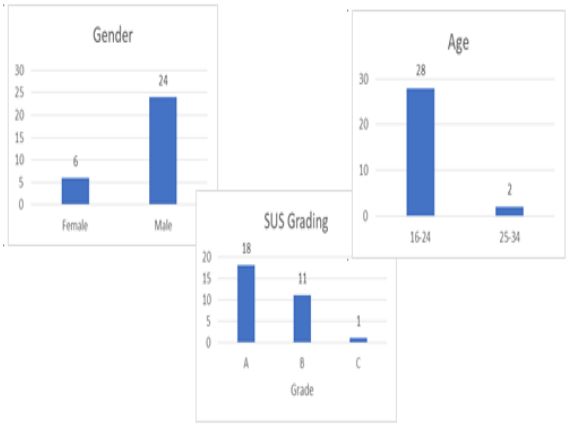
| Age | Thick |
|---|---|
| 0 - 15 | |
| 16-24 | |
| 25-34 | |
| 45-54 | |
| 65+ | |

Additional Comments

**Figure 17.** Example of SUS Questionnaire

In fig. 17 is shown the example of SUS questionnaire. Before the last iteration of my software development which is *Prototype Methodology*, the questionnaire is spread-out randomly. This questionnaire is filled after the user tried the application for the first time. The total respondent of this survey is thirty persons, then the result of this survey are gender, age, and grades that already calculated using SUS methodology.

**A. Result**




Those diagrams are representing result of the survey, there are 24 males which is 80% of the respondents are male and the rest of it is female. Then, 93% of the respondents are teenagers within 16-24 years old. And the last one is according the SUS methodology for grading the usability of application, the survey gives a result that there are 60% of "A" grade, 36.7% of "B" grade, and 3.3% of "C" grade. The detail of the survey responds may be seen in appendix.

**B. Conclusion**

According to the results given, as a beta application, this application is resulting positive responds from the user because there are more than 50% respondents that are giving "A" grade. However, there are several comments that are given for the application improvement, those feedbacks will be compiled and written in 5th iteration.

**CONCLUSION**

This application is being propose as an application where user is able to retrieve filtered news, analyze news, and application personalization. Moreover, the gamification part where it is invented to attract user's enthusiast is successfully integrated. Based on the play testing and survey, all the functions which are mentioned in chapter four are integrated well and there are successfully connected with the backend functions. Moreover, the user interface has been successfully built according to the color theory and the first survey about color preferences. The design itself has been fulfill the requirement of Shneiderman's Eight Golden Rules. This application also has been successfully built using hybrid programming method and the design itself is clearly not similar to existing others news aggregator in Indonesia.

**REFERENCES**

1. Hartono, "Dampak Teknologi Informasi Terhadap Penyebaran Informasi di Masyarakat," Majalah : Visi Pustaka, vol. IV, no. 2, Desember 2002.
2. Cambridge University Press, "Meaning of "hoax" in the English Dictionary," Cambridge University, [Online]. Available: http://dictionary.cambridge.org/dictionary/english/hoax. [Accessed 24 2 2017].
3. Liputan6.com, "Darimana Asal Usul Hoax?," Liputan6.com, Jakarta, 2017.
4. detikInet, "Mengenal Trust+, Mesin Blokir 'Situs Haram' Kominfo," detikcom, 12 May 2014. [Online]. Available: http://inet.detik.com/cyberlife/d-2580028/mengenal-trust-mesin-blokir-situs-haram-kominfo. [Accessed 24 February 2017].
5. E. Karensa, "Anti Hoax Campaign Kicks Off in Indonesia," 08 January 2017. [Online]. Available:

http://jakartaglobe.id/jakarta/anti-hoax-campaign-kicks-off-indonesia/. [Accessed 22 January 2017].
6. A. N. Ngazis, "Hoax Masih Terus Bertebaran, Kenali Ciri-cirinya," Viva.co.id, 30 January 2017. [Online]. Available: http://teknologi.news.viva.co.id/news/read/876829-hoax-masih-terus-bertebaran-kenali-ciri-cirinya. [Accessed 10 March 2017].
7. Y. Rienaldo, "Hati-hati Berita "Hoax", Amati Ciri-cirinya...," Kompas.com, 23 January 2017. [Online]. Available: http://nasional.kompas.com/read/2017/01/23/08013411/hati-hati.berita.hoax.amati.ciri-cirinya.. [Accessed 10 March 2017].
8. C. Olston and M. Najork, "Web Crawling," Foundations and Trends® in Information Retrieval, vol. 4, no. 3, pp. 175-246, 2010.
9. U. Schonfield and N. Shivakumar, "Sitemaps: above and beyond the crawl of duty.," in Proceedings of the 18th international conference on World wide web., ACM, 2009.
10. B. Cooksey, An Introduction to APIs, B. Landers and D. Schreiber, Eds., Zapier, Inc., 2014.
11. A. Leff and J. T. Rayfield, "Web-application development using the model/view/controller design pattern," in Enterprise Distributed Object Computing Conference, 2001. EDOC'01. Proceedings. Fifth IEEE International, IEEE, 2001.
12. J. Sauro, "MEASURING USABILITY WITH THE SYSTEM USABILITY SCALE (SUS)," 2011.
13. K. Isbell, "The Rise of the News Aggregator: Legal Implications and Best Practices," SSRN Electric Journal, August 2010.
14. Indonesia Government, "UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 19 TAHUN 2002 TENTANG HAK CIPTA," 2002.
15. A. Dix, J. Finlay, G. D.Abowd and R. Beale, Human Computer Interaction, New Jersey, America: Prentice Hall, 2003.
16. L. Williams, "An Introduction to the Unified Modeling Language," 2004.
17. B. SHNEIDERMAN, C. PLAISANT, M. COHEN, S. JACOBS, N. ELMQVIST and N. DIAKOPOULOS, Designing the User Interface: Strategies for Effective Human-Computer Interaction (6th Edition), April: Pearson, 2016.
18. A. Wright, A Theory of Colour Psychology and Colour Harmony, London: Colour Affects Ltd, 1998.
19. G. Richter, D. R. Raban and S. Rafaeli, "Studying Gamification: The Effect of Rewards and Inventives on Motivation," in Gamification in Education and Business, New York, Springer International Publishing, 2015, pp. 21 - 41.
20. Centers for Medicare & Medicaid Services, "Selecting a Development Approach," 27 March 2008. [Online]. Available: https://www.cms.gov/Research-Statistics-Data-and-Systems/CMS-Information-Technology/XLC/Downloads/SelectingDevelopmentApproach.pdf. [Accessed 2017 March 4].
21. A. Harris, HTML5 For Dummies Quick Reference, New Jersey: John Wiley & Sons, 2011.
22. D. Crockford, JavaScript: The Good Parts, Newton, Massachusetts: O'Reilly Media, 2008.
23. T. Fuchs, "Zepto.js, a jQuery-compatible mobile JavaScript framework in 2K," 28 October 2010. [Online]. Available: http://mir.aculo.us/2010/10/28/zepto-js-a-jquery-compatible-mobile-javascript-framework-in-2k-presentation/. [Accessed 3 June 2017].
24. The Apache Software Foundation, The Apache Software Foundation, [Online]. Available: http://cordova.apache.org/docs/en/latest/guide/overview/index.html. [Accessed 3 June 2017].
25. tutorialspoint.com, "Framework7 Tutorial," 20 July 2016. [Online]. Available: https://www.tutorialspoint.com/framework7/index.htm. [Accessed 09 September 2017].
26. J. Valade, PHP 5 For Dummies, New Jersey: John Wiley & Sons, 2004.
27. B. Skvorc, "The Best PHP Framework for 2015: SitePoint Survey Results," SitePoint, 30 March 2015. [Online]. Available: https://www.sitepoint.com/best-php-framework-2015-sitepoint-survey-results/. [Accessed 8 March 2017].
28. A. B. Pratama, "Ada 800 Ribu Situs Penyebar Hoax di Indonesia," 29 December 2016. [Online]. Available: http://www.cnnindonesia.com/teknologi/20161229170130-185-182956/ada-800-ribu-situs-penyebar-hoax-di-indonesia/. [Accessed 22 January 2017].
29. S. Yates, "Fake news' – why people believe it and what can be done to counter it," world.edu, 13 December 2016. [Online]. Available: http://world.edu/fake-news-people-believe-can-done-counter/. [Accessed 27 February 2017].
30. K. Seaborn and D. I. Fels, "Gamification in theory and action: A survey," Int. J. Human-Computer Studies, pp. 14-31, 2014.
31. J. Stark, Building Android Apps, Newton, Massachusetts: O'Reilly Media, 2010.
32. D. Odell, Pro JavaScript Development: Coding, Capabilities, and Tooling, California: Apress, 2014.
33. A. Wright, "Psychological Properties Of Colours," [Online]. Available: http://www.colour-affects.co.uk/psychological-properties-of-colours. [Accessed 7 March 2017].
34. C. Minnick, Coding with JavaScript For Dummies, New York: John Wiley & Sons, 2015.
35. V. L. Rubin, N. J. Conroy, Y. Chen and S. Cornwell, "Fake News or Truth? Using Satirical Cues to Detect Potentially Misleading News.," in Proceedings of the Workshop on Computational Approaches to Deception Detection at the 15th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies(NAACL-CADD2016), San Diego, 2016.
36. C. Mutia and P. A. E. Andrianto, "The Different Effect of Decision-Making Style Toward the Quality of Decisions Among Young Adults in Indonesia when Faced with Hoax," in Academic International Conference on Social Sciences and Humanities (AICSSH 2016), Oxford, 2016.
37. F. Sebastiani, "Machine Learning in Automated Text Categorization," ACM Computing Surveys, vol. 34, pp. 1-47, April 2001.