

## **BAB V**

### **PENUTUP**

#### **5.1 Kesimpulan**

Berdasarkan hasil penelitian perancangan ini, penulis menyimpulkan beberapa hal sebagai berikut:

1. Berhasil membangun model *Natural Language Processing* dengan *Deep Learning* dengan model CNN dapat akurasi dari pelatihan sebanyak 10 *epoch* mencapai 99.7%, LSTM mencapai 99.5%, dan MLP mencapai 84.9%. Dan persentase ketiga model dari hasil pengujian 10 kalimat Tidak Terindikasi Depresi, CNN dapat mengklasifikasi 8 dari 10 kalimat, MLP dapat mengklasifikasi 3 dari 10 kalimat, dan LSTM tidak dapat mengklasifikasi 10 kalimat Tidak Terindikasi Depresi. Dan 10 kalimat Terindikasi Depresi, CNN dapat mengklasifikasi 5 dari 10 kalimat, MLP dapat mengklasifikasi 7 dari 10 kalimat, dan LSTM dapat mengklasifikasi 10 kalimat Terindikasi Depresi. Tetapi pada pengembangan ini hanya sebatas model yang tidak bisa digunakan untuk umum.
2. Berhasil mengimplementasikan model *Natural Language Processing* dengan *Deep Learning* dan tambahan fitur *Speech Recognition* sebagai fitur *input* data, kemudian akan diubah menjadi teks dan model akan menilai klasifikasi teks.

## 5.2 Saran

Meskipun demikian, penelitian perancangan model belum sempurna karena keterbatasan waktu, pengetahuan, dan tujuan *scope* yang dimiliki penulis. Harapan penulis pada penelitian perancangan ini dapat disempurnakan dengan saran:

1. Model ini dapat diimplementasikan ke perangkat *smarphone Andorid* ataupun *iOS*.
2. Modelnya dapat dikembangkan lebih jauh dan dapat menilai teks tersebut lebih akurat dan lebih baik.
3. Menambah *dataset* lebih banyak untuk dilatih

## DAFTAR PUSTAKA

- Allen, L. K., Creer, S. C., & Öncel, P. (2022). *Chapter 5 : Natural Language Processing as a Tool for Learning Analytics - Towards a Multi-Dimensional View of the Learning Process*. 46–53. <https://doi.org/10.18608/hla22.005>
- Andrebudiman. (2020). *No Title*. andrebudiman / DatasetIndikasiDepresi / Data10k\_Csv.csv
- Asad, N. Al, Mahmud Pranto, M. A., Afreen, S., & Islam, M. M. (2019). Depression Detection by Analyzing Social Media Posts of User. *2019 IEEE International Conference on Signal Processing, Information, Communication and Systems, SPICSCON 2019*, 13–17. <https://doi.org/10.1109/SPICSCON48833.2019.9065101>
- Auliasin, E., Rusdianto, D. S., & Soebroto, A. A. (2019). Pengembangan Aplikasi Diagnosis Gejala Depresi pada Mahasiswa Fakultas Ilmu Komputer Studi Kasus Fakultas Ilmu Komputer Universitas Brawijaya. *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, 3(9), 8823–8830. <http://j-ptiik.ub.ac.id>
- Chary, M., Parikh, S., Manini, A. F., Boyer, E. W., & Radeos, M. (2019). A review of natural language processing in medical education. *Western Journal of Emergency Medicine*, 20(1), 78–86. <https://doi.org/10.5811/westjem.2018.11.39725>
- Dong, L., Xu, S., & Xu, B. (2018). SPEECH-TRANSFORMER : A NO-RECURRENCE SEQUENCE-TO-SEQUENCE MODEL FOR SPEECH RECOGNITION Institute of Automation , Chinese Academy of Sciences ,

- China University of Chinese Academy of Sciences , China. *ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing - Proceedings*, 5884–5888.  
[http://150.162.46.34:8080/icassp2018/ICASSP18\\_USB/pdfs/0005884.pdf](http://150.162.46.34:8080/icassp2018/ICASSP18_USB/pdfs/0005884.pdf)
- Estimates, G. H. (2017). *Depression and Other Common Mental Disorders Global Health Estimates*.
- Gong, X., & Xiao, Y. (2021). A skin cancer detection interactive application based on CNN and NLP. *Journal of Physics: Conference Series*, 2078(1), 0–7.  
<https://doi.org/10.1088/1742-6596/2078/1/012036>
- Gu, J., Wang, Z., Kuen, J., Ma, L., Shahroudy, A., Shuai, B., Liu, T., Wang, X., Wang, G., Cai, J., & Chen, T. (2018). Recent advances in convolutional neural networks. *Pattern Recognition*, 77, 354–377.  
<https://doi.org/10.1016/j.patcog.2017.10.013>
- Huang, X., Baker, J., & Reddy, R. (2014). A historical perspective of speech recognition. *Communications of the ACM*, 57(1), 94–103.  
<https://doi.org/10.1145/2500887>
- Kamath, U., Liu, J., & Whitaker, J. (2019). *Deep Learning for Natural Language Processing (NLP) and Speech Recognition*. <https://doi.org/10.1007/978-3-030-14596-5>
- Le Glaz, A., Haralambous, Y., Kim-Dufor, D. H., Lenca, P., Billot, R., Ryan, T. C., Marsh, J., DeVlyder, J., Walter, M., Berrouiguet, S., & Lemey, C. (2021). Machine learning and natural language processing in mental health: Systematic review. *Journal of Medical Internet Research*, 23(5), 0–20.

<https://doi.org/10.2196/15708>

- Learning, D., Haque, R., Islam, N., Islam, M., & Ahsan, M. (2022). *A Comparative Analysis on Suicidal Ideation Detection Using NLP, Machine, and Deep Learning*.
- Leon-Paredes, G. A., Palomeque-Leon, W. F., Gallegos-Segovia, P. L., Vintimilla-Tapia, P. E., Bravo-Torres, J. F., Barbosa-Santillan, L. I., & Paredes-Pinos, M. M. (2019). Presumptive Detection of Cyberbullying on Twitter through Natural Language Processing and Machine Learning in the Spanish Language. *IEEE CHILEAN Conference on Electrical, Electronics Engineering, Information and Communication Technologies, CHILECON 2019*, 1–7. <https://doi.org/10.1109/CHILECON47746.2019.8987684>
- Martins, R. M., & Wangenheim, C. G. V. O. N. (2023). *Findings on Teaching Machine Learning in High School : A Ten - Year Systematic Literature Review*. 00(00). <https://doi.org/10.15388/infedu.2023.18>
- Miharja, M. N. D., & Adhkar, S. (2022). Implementasi Chatbot Deteksi Depresi Dini Pada Mahasiswa Dengan Phq-9 (Patient Health Questionnaire) Menggunakan NLP (Natural Language Processing). *Prosiding Sains Dan Teknologi; Vol 1 No 1 (2022): Juli 2022 (In Progress)*, 1(1), 103–108. <https://jurnal.pelitabangsa.ac.id/index.php/SAINTEK/article/view/1156>
- Munasatya, N., & Novianto, S. (2020). Natural Language Processing untuk Sentimen Analisis Presiden Jokowi Menggunakan Multi Layer Perceptron. *Techno.Com*, 19(3), 237–244. <https://doi.org/10.33633/tc.v19i3.3630>
- Nehme, F., & Feldman, K. (2020). Evolving Role and Future Directions of

- Natural Language Processing in Gastroenterology. *Digestive Diseases and Sciences*, 0123456789. <https://doi.org/10.1007/s10620-020-06156-y>
- Nurmalina, R. (2017). *Perencanaan dan Pengembangan Aplikasi Absensi Mahasiswa Menggunakan Smart Card Guna Pengembangan Kampus Cerdas (Studi Kasus Politeknik Negeri Tanah Laut)*. 9(1), 84–91.
- Nurrochman, M. M., & Prasasti, A. L. (2021). Implementasi Machine Learning Untuk Mendeteksi Unsur Depresi Pada Tweet Menggunakan Metode Naïve Bayes. *E-Proceeding of Engineering*, 8(5), 6250–6257.
- Popescu, M., Balas, V. E., & Mastorakis, N. (2009). *Multilayer Perceptron and Neural Networks LILIANA PERESCU-POPESCU*. 8(7), 579–588.
- Ridlo, I. A. (2017). Pedoman Pembuatan Flowchart. *Academia.Edu*, 27. [academia.edu/34767055/Pedoman\\_Pembuatan\\_Flowchart](https://www.academia.edu/34767055/Pedoman_Pembuatan_Flowchart)
- Rizki, A., & Sibaroni, Y. (2021). Analisis Sentimen Untuk Pengukuran Tingkat Depresi Pengguna Twitter Menggunakan Deep Learning. *E-Proceeding of Engineering*, 8(5), 11367–11375.
- Shah, F. M., Ahmed, F., Saha Joy, S. K., Ahmed, S., Sadek, S., Shil, R., & Kabir, M. H. (2020). Early Depression Detection from Social Network Using Deep Learning Techniques. *2020 IEEE Region 10 Symposium, TENSYP 2020, August*, 823–826. <https://doi.org/10.1109/TENSYP50017.2020.9231008>
- Sial, A. H., Yahya, S., & Rashdi, S. (2021). Comparative Analysis of Data Visualization Libraries Matplotlib and Seaborn in Python. *International Journal of Advanced Trends in Computer Science and Engineering*, 10(1), 277–281. <https://doi.org/10.30534/ijatcse/2021/391012021>

- Sisk, D. (2018). Simulation: Learning by doing revisited. *Gifted Child Quarterly*, 19(2), 175–180. <https://doi.org/10.1177/001698627501900225>
- Stepanek, H. (2020). Thinking in Pandas. In *Thinking in Pandas*. <https://doi.org/10.1007/978-1-4842-5839-2>
- Sukeza, I. K. (2022). *CRISP DM Sebagai Salah Satu Standard untuk Menghasilkan Data Driven Decision Making yang Berkualitas*. <https://www.djkn.kemenkeu.go.id/artikel/baca/15134/CRISP-DM-Sebagai-Salah-Satu-Standard-untuk-Menghasilkan-Data-Driven-Decision-Making-yang-Berkualitas.html>
- Sulistiyorini, W., & Sabarisman, M. (2017). Depresi : Suatu Tinjauan Psikologis. *Sosio Informa*, 3(2), 153–164. <https://doi.org/10.33007/inf.v3i2.939>
- Taft, D. K. (2010). *JetBrains Strikes Python Developers with PyCharm 1.0 IDE*. <https://archive.ph/20130122124720/http://www.eweek.com/c/a/Application-Development/JetBrains-Strikes-Python-Developers-with-PyCharm-10-IDE-304127/>
- Thangarajah, V. (2019). International Journal of Advance EnginThangarajah, V. (2019). International Journal of Advance Engineering and Research PYTHON CURRENT TREND APPLICATIONS- AN OVERVIEW. ResearchGate, October 2019, 6–12.eering and Research PYTHON CURRENT TREND APPLICATIONS-. *ResearchGate*, October 2019, 6–12.
- Tran, M., & Chauhan, V. (2021). *Python-based scikit-learn machine learning models for thermal and electrical performance prediction of high- capacity lithium-ion battery*. August, 1–9. <https://doi.org/10.1002/er.7202>

- Tri, J., Jurnal, A., Jiwa, K., Rianit, M., Sinaga, E., Aria, M., & Rinaldi, R. (2020). *Factors Causing Stress in Health and Community When the Covid-19 Pandemic Related papers The Effectiveness of the Intervention Depression in the Elderly: A Systematic Review Prosiding Seminar Nasional Lustrum 5 Psikologi Undip final dikonversi.*
- Uddin, M. Z., Dysthe, K. K., Følstad, A., & Brandtzaeg, P. B. (2022). Deep learning for prediction of depressive symptoms in a large textual dataset. *Neural Computing and Applications*, 34(1), 721–744.  
<https://doi.org/10.1007/s00521-021-06426-4>
- Van Houdt, G., Mosquera, C., & Nápoles, G. (2020). A review on the long short-term memory model. *Artificial Intelligence Review*, 53(8), 5929–5955.  
<https://doi.org/10.1007/s10462-020-09838-1>
- Wang, X., Liu, Y., Sun, C., Wang, B., & Wang, X. (2015). Predicting polarities of tweets by composing word embeddings with long short-Term memory. *ACL-IJCNLP 2015 - 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing of the Asian Federation of Natural Language Processing, Proceedings of the Conference*, 1, 1343–1353.  
<https://doi.org/10.3115/v1/p15-1130>
- Yegulalp, S. (2022). *What is TensorFlow? The machine learning library explained.* Infoworld.Com.  
<https://www.infoworld.com/article/3278008/what-is-tensorflow-the-machine-learning-library-explained.html>



Zhao, Y., Yan, B., Liu, D., He, Y., Wang, D., & Zhang, J. (2018). SOON: self-optimizing optical networks with machine learning. *Optics Express*, 26(22), 28713. <https://doi.org/10.1364/oe.26.028713>