LAMPIRAN

Lampiran 1. Aturan Fuzzy

a. Beban Rendah

1. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 11) THEN (Hasil is 15)
2. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 12) THEN (Hasil is 16)
3. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 13) THEN (Hasil is 17)
4. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 14) THEN (Hasil is 18)
5. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 15) THEN (Hasil is 19)
6. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 16) THEN (Hasil is 20)
7. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 17) THEN (Hasil is 21)
8. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 18) THEN (Hasil is 22)
9. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 19) THEN (Hasil is 23)
10. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 20) THEN (Hasil is 24)
11. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 21) THEN (Hasil is 25)
12. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 22) THEN (Hasil is 26)

13. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 23) THEN (Hasil is 27)
14. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 24) THEN (Hasil is 28)
15. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 25) THEN (Hasil is 29)
16. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 26) THEN (Hasil is 30)
17. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 27) THEN (Hasil is 31)
18. IF (2019 is 5) A (2020 is 7) AND (2021 is 7) AND (2022 is 12) AND (2023 is 28) THEN (Hasil is 32)

b. Beban Sedang

1. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 11) THEN (Hasil is 15)
2. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 12) THEN (Hasil is 16)
3. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 13) THEN (Hasil is 17)
4. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 14) THEN (Hasil is 18)
5. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 15) THEN (Hasil is 19)
6. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 16) THEN (Hasil is 20)

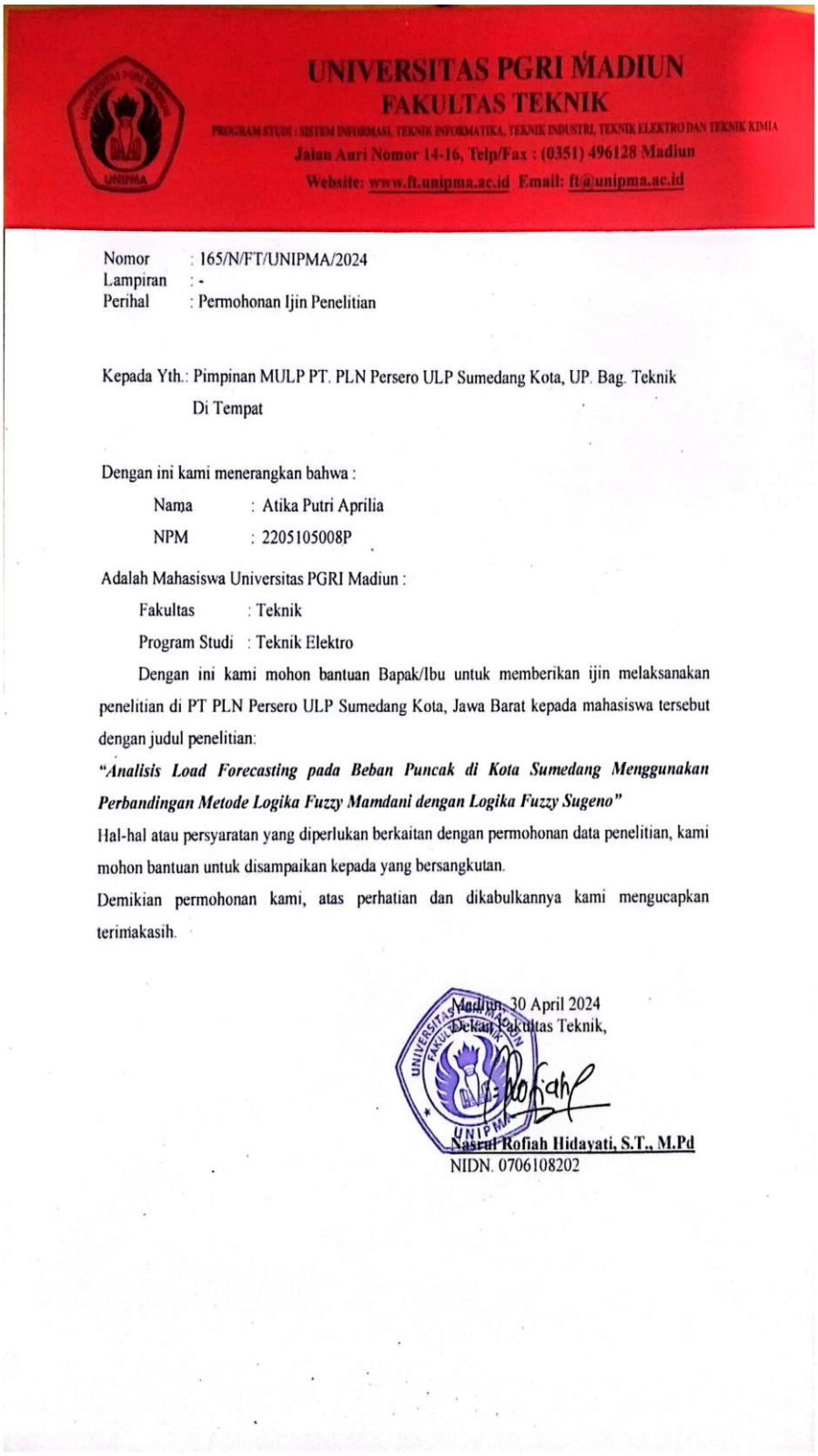
7. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 17) THEN (Hasil is 21)
8. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 18) THEN (Hasil is 22)
9. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 19) THEN (Hasil is 23)
10. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 20) THEN (Hasil is 24)
11. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 21) THEN (Hasil is 25)
12. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 22) THEN (Hasil is 26)
13. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 23) THEN (Hasil is 27)
14. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 24) THEN (Hasil is 28)
15. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 25) THEN (Hasil is 29)
16. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 26) THEN (Hasil is 30)
17. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 27) THEN (Hasil is 31)
18. IF (2019 is 8) A (2020 is 10) AND (2021 is 12) AND (2022 is 16) AND (2023 is 28) THEN (Hasil is 32)

c. Beban Tinggi

1. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 13) THEN (Hasil is 15)
2. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 14) THEN (Hasil is 16)
3. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 15) THEN (Hasil is 17)
4. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 16) THEN (Hasil is 18)
5. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 17) THEN (Hasil is 19)
6. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 18) THEN (Hasil is 20)
7. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 19) THEN (Hasil is 21)
8. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 20) THEN (Hasil is 22)
9. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 21) THEN (Hasil is 23)
10. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 22) THEN (Hasil is 24)
11. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 23) THEN (Hasil is 25)
12. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 24) THEN (Hasil is 26)
13. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 25) THEN (Hasil is 27)

14. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 26) THEN (Hasil is 28)
15. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 27) THEN (Hasil is 29)
16. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 28) THEN (Hasil is 30)
17. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 29) THEN (Hasil is 31)
18. IF (2019 is 10) A (2020 is 16) AND (2021 is 18) AND (2022 is 23) AND (2023 is 30) THEN (Hasil is 32)

Lampiran 2. Surat Penelitian



UNIVERSITAS PGRI MADIUN
FAKULTAS TEKNIK
PROGRAM STUDI : SISTEM INFORMASI, TEKNIK INFORMATIKA, TEKNIK INDUSTRI, TEKNIK ELEKTRO DAN TEKNIK KIMIA
Jalan Auri Nomor 14-16, Telp/Fax : (0351) 496128 Madiun
Website: www.ft.unipma.ac.id Email: ft@unipma.ac.id

Nomor : 165/N/FT/UNIPMA/2024
Lampiran : -
Perihal : Permohonan Ijin Penelitian

Kepada Yth.: Pimpinan MULP PT. PLN Persero ULP Sumedang Kota, UP. Bag. Teknik
Di Tempat

Dengan ini kami menerangkan bahwa :

Nama : Atika Putri Aprilia
NPM : 2205105008P

Adalah Mahasiswa Universitas PGRI Madiun :

Fakultas : Teknik
Program Studi : Teknik Elektro

Dengan ini kami mohon bantuan Bapak/Ibu untuk memberikan ijin melaksanakan penelitian di PT PLN Persero ULP Sumedang Kota, Jawa Barat kepada mahasiswa tersebut dengan judul penelitian:

"Analisis Load Forecasting pada Beban Puncak di Kota Sumedang Menggunakan Perbandingan Metode Logika Fuzzy Mamdani dengan Logika Fuzzy Sugeno"

Hal-hal atau persyaratan yang diperlukan berkaitan dengan permohonan data penelitian, kami mohon bantuan untuk disampaikan kepada yang bersangkutan.

Demikian permohonan kami, atas perhatian dan dikabulkannya kami mengucapkan terimakasih.

Madiun, 30 April 2024
Dekan Fakultas Teknik,

Nasrul Rofiah Hidayati, S.T., M.Pd
NIDN. 0706108202

Lampiran 3. Surat dari PT. PLN Sumedang

PLN

UID JAWA BARAT
UP3 SUMEDANG
ULP SUMEDANG KOTA

Nomor : 0212/STH.01.04/F02140300/2024 19 Juli 2024
Lampiran : -
Sifat : Segera
Hal : Tindaklanjut Permohonan Lokasi Penelitian

Kepada

Yth. Bpk/Ibu Dekan
Fakultas Teknik
Universitas PGRI Madiun
Di
Tempat

Menindaklanjuti surat Saudara Nomor : 165/N/FT/UNIPMA/2024 tanggal 30 April 2024 perihal permohonan izin penelitian, bersama surat ini kami sampaikan untuk mahasiswa atas nama :

NAMA	NPM/NIM
Atika Putri Aprilia	2205105008P

dapat diterima untuk melaksanakan penelitian di PT PLN (Persero) UP3 Sumedang - ULP Sumedang Kota. Sesuai dengan peraturan perusahaan, mahasiswa tersebut wajib mematuhi semua ketentuan dan peraturan yang berlaku di PT PLN (Persero) UP3 Sumedang - ULP Sumedang Kota.

Untuk informasi dan koordinasi terkait dengan pelaksanaan kegiatan bapak/ibu/sdr.i dapat menghubungi TL Pelayanan Pelanggan – Sakina Yuliatri pada kontak Telp . 081-249-623-882 / Email : sakina.yuliatri@pln.co.id

Demikian,kami sampaikan atas perhatiannya kami ucapkan terima kasih.

MANAGER UNIT LAYANAN
PELANGGAN SUMEDANG KOTA,

UID JAWA BARAT UP3 SUMEDANG ULP SUMEDANG KOTA (Persero)

MUHAMAD FAJAR MAULANA

Jl. Palasari No. 75
T (0261) 201226 F (0261) 201122 W www.pln.co.id

Paraf

Lampiran 4. Turnitin

ELECTRA
Electrical Engineering Articles
ELECTRA : Electrical Engineering Articles
Vol. XY No. 01 September 2024
DOI doi.org/10.25273/electra
ISSN 2747-0539 (Online) | 2745-598X (Print)

SURAT KETERANGAN HASIL CEK PLAGIASI
Nomor: 013.h/PC/ELECTRA/UNIPMA/VII/2024

Yang bertanda tangan di bawah ini:

Nama	: Bayu Fandidarma, S.T., M.T.
NIDN	: 0722069005
Jabatan	: Koordinator Cek Plagiasi

Dengan ini menerangkan bahwa:

Nama	: Atika Putri Aprilia
NIM	: 2205105008P
Program Studi	: Teknik Elektro
Judul Skripsi	: KEEFEKTIFAN METODE LOGIKA FUZZY MAMDANI DAN LOGIKA TAKAGI SUGENO DALAM MELAKUKAN LOAD FORECASTING PADA BEBAN PUNCAK DI KOTA SUMEDANG

telah melakukan pemeriksaan terhadap naskah skripsi yang bersangkutan dengan menggunakan perangkat lunak pendeteksi plagiasi **Turnitin**. Berdasarkan hasil pemeriksaan tersebut, didapatkan hasil sebagai berikut:

Persentase Kemiripan (Similarity Index): 16 %

Dengan hasil ini, dinyatakan bahwa naskah skripsi yang bersangkutan:

- ☑ Bebas dari indikasi plagiasi
- ☐ Sedikit revisi karena terdapat kemiripan lebih dari 25%
- ☐ Memerlukan revisi besar karena terdapat indikasi plagiasi yang signifikan

Demikian surat keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Madiun, 22 Juli 2024
Koordinator Cek Plagiasi,

ELECTRA

Bayu Fandidarma, S.T., M.T.
NIDN. 0722069005

Catatan:
Surat ini dilampirkan bersama dengan hasil pemeriksaan plagiasi yang diperoleh dari perangkat lunak pendeteksi plagiasi.

Lampiran 5. Validasi Sumber Pustaka

VALIDASI SUMBER PUSTAKA PENULISAN SKRIPSI

Nama : Atika Putri Aprilia

NIM : 2205105008P

Program Studi : Teknik Elektro

Fakultas : Teknik

Dosen Pembimbing : 1. Churnia Sari, S.T., M.T.
2. Ina Sunaryantiningsih,S.T.,S.Pd.,M.T.

Judul : Keefektifan Metode Logika *Fuzzy* Mamdani dan Logika *Fuzzy* Takagi – Sugeno Dalam Melakukan *Load Forecasting* Pada Beban Pucak Di Kota Sumedang

No	Sumber Pustaka	Halaman		Hasil Validasi	
		Pustaka	Skripsi	Sesuai	Tidak Sesuai
1.	Djalal, M. R., & Robandi, I. (2022). Pemodelan Peramalan Beban pada System Sulselrabar Menggunakan Tipe-2 Logika Fuzzy. *Jurnal Teknologi Elekterika*, *19*(2), 89. https://doi.org/10.31963/elekterika.v6i2.3751				
2.	Imran, A., Robandi, I., Yusuf Mappeasse, M., & Ruswandi Djalal, M. (2021). Membership Function Optimization of Fuzzy Logic System Using Cuckoo Search Algorithm for Peak Load Forecasting in Indonesian National Holiday. *Journal of Electrical Technology UMY (JET-UMY)*, *5*(2).				
3.	Suprapto, H., & Simanjuntak, P. (2020). Fuzzy Logic Untuk				

	Memprediksi Pemakaian Listrik Menggunakan Metode Mamdani. *JURNAL COMASIE*.				
4.	Renartha Kusuma, S., Sari Hartati, R., & Wayan Sukerayasa, I. (2020). *Pengaruh Jumlah Fungsi Keanggotaan Pada Metode Fuzzy Logic Terhadap Hasil Peramalan Beban Listrik Jangka Panjang* (Vol. 7, Issue 1).				
5.	Ramadhan, H. G., Akil, Y. S., & Gunadin, I. C. (n.d.). Analisis Aliran Daya Menggunakan Metode Fuzzy Logic pada Sistem Listrik Sulbagsel. *Jurnal EKSITASI*, *1*(2), 2022.				
6.	Julpia, E., & Mashuri, A. ∗. (2021). Implementasi Logika Fuzzy Metode Mamdani Pada Prediksi Biaya Pemakaian Listrik. In *UJM* (Vol. 11, Issue 2). http://journal.unnes.ac.id/sju/index.php/ujm				
7.	Agustin Kuswanto, R., & Wrahatnolo, T. (n.d.). *Prakiraan Beban Listrik Jangka Pendek Untuk Jaringan Distribusi 20 KV Berbasis Fuzzy Logic (Studi Kasus Pada APJ. Surabaya Selatan dan Surabaya Barat)*.				
8.	Rizaldi, A. M., Ridwan, A., Anisa, Y., Salam, R., Intyanto, G. W., Cotfas, D. T., Cuong, V. H., & Udoudom, U. I. (2023). Short-Term Forecasting of Electricity Consumption Using Fuzzy Logic. *Journal of*				

	Renewable Energy, Electrical, and Computer Engineering, *3*(2), 44. https://doi.org/10.29103/jreece.v3i2.11281				
9.	Muhtar, M., Windarko, N. A., S Suda, K. R., Teknik Elektro, J., Elektronika Negeri Surabaya, P., & Teknik Informatika dan Komputer, J. (2023). Short Term Forecasting Beban Listrik Menggunakan Artificial Neural Network. *Jurnal Pendidikan Teknologi Dan Kejuruan*, *20*(1).				
10.	Khasanah, U., Novitasari, D. C. R., Utami, W. D., Intan, K., Uin, M., Surabaya, S. A., & Id, D. A. (2019). *Analisis Peramalan Beban Listrik Jangka Pendek Menggunakan Metode Adaptive Neuro Fuzzy Inference System (Studi Kasus : PT. PLN (Persero) Area Pengaturan Distribusi Jawa Timur)* (Vol. 01, Issue 01).				
11.	Handayani, T., Putra Halilintar, M., Studi Teknik Elektro, P., Teknik, F., & Lancang Kuning Pekanbaru Jl Yos Sudarso Rumbai, U. (2019). Studi Perkiraan Kebutuhan Energi Listrik Di Kota Dumai Sampai Tahun 2025 Dengan Metoda Fuzzy Logic. *Jurnal Sain, Energi, Teknologi & Industri)*, *3*(2), 42–49.				
12.	Yulia & Arnomo, S. A. (2022). *Penerapan Fuzzy Inferensi System Menggunakan Metode Mamdani Dalam Menentukan Besarnya Pemakaian Listrik Rumah Tangga Di Kota*				

	Batam. http://journal.aptikomkepri.org/index.php/JDDAT				
13.	Aminulloh, H. R., & Kartini, U. T. (n.d.). *Peramalan Beban Listrik Jangka Pendek Menggunakan Metode Fuzzy Multi - Attribute Decision Making Decomposition Feed Forward Neural Network (FMADM-Dec-FFNN)*.				
14.	Jamaaluddin, J., Robandi, I., Anshory, I., & Fudholi, A. (2020). *Very Short - Term Load Forecasting Of Peak Load Time Using Fuzzy Type - 2 And Big Bang Big Crunch (BBBC) Algorithm*. *15*(7). www.arpnjournals.com				
15.	Wahyudi, A., Jember Moch Gozali, U., & Dias Kalandro, G. (n.d.). *Peramalan Beban Listrik yang Tersambung pada Penyulang PT PLN (PERSERO) ULP Tanggul Tahun 2020-2024 Menggunakan Metode Adaptive Neuro Fuzzy Inference System (ANFIS)*.				

Catatan Dosen Pembimbing:

Layak / Tidak Layak untuk diuji (coret yang tidak perlu)

Madiun, 23 Juli 2023

Dosen Pembimbing

Churnia Sari, S.T., M.T.
NIDN. 0708129004

Lampiran 6. Daftar Riwayat Hidup

Atika Putri Aprilia dilahirkan di Kota Madiun pada tanggal 16 April 1997, anak pertama dari dua bersaudara, dari pasangan Bapak Kardi dan Ibu Tatik. Tamat TK Tiara Madiun tahun 2003 , SD 03 Klegen Tahun 2009 SMPN 5 Madiun tahun 2012, SMAN 3 Madiun tahun 2015, D3 Teknik Elektro Institut Teknologi Sepuluh Nopember Surabaya tahun 2018. Pendidikan berikutnya ditempuh di Program Studi Teknik Elektro Fakultas Teknik, Universitas PGRI Madiun.