

DAFTAR PUSTAKA

- Al-Sodairi, S., & Ouni, R. (2018). Reliable and energy-efficient multi-hop LEACH-based clustering protocol for wireless sensor networks. *Sustainable Computing: Informatics and Systems*, 20, 1–13.
<https://doi.org/10.1016/j.suscom.2018.08.007>
- Ananda Kumar, S., Ilango, P., & Dinesh, G. H. (2016). A modified LEACH protocol for increasing lifetime of the wireless sensor network. *Cybernetics and Information Technologies*, 16(3), 154–164. <https://doi.org/10.1515/cait-2016-0040>
- Babu M, V., Kumar, C. N. S. V., Parthiban, S., Padmavathi, U., & Rahman, M. Z. U. (2022). AE-LEACH: An Incremental Clustering Approach for Reducing the Energy Consumption in WSN. *Microprocessors and Microsystems*, 93(November 2021), 104602. <https://doi.org/10.1016/j.micpro.2022.104602>
- Chang, W. J., & Chang, W. (2004). Fuzzy controller design for discrete time-delay affine Takagi-Sugeno fuzzy systems. *IEEE International Conference on Fuzzy Systems*, 3, 1467–1472.
<https://doi.org/10.1109/FUZZY.2004.1375390>
- Chia, S. Y., & Lim, M. W. (2022). A critical review on the influence of humidity for plant growth forecasting. *IOP Conference Series: Materials Science and Engineering*, 1257(1), 012001. <https://doi.org/10.1088/1757-899x/1257/1/012001>
- Coker, C., Greene, E., Shao, J., Enclave, D., Tula, R., Marg, R., Jones, L., Hameiri, S., Cansu, E. E., Initiative, R., Maritime, C., Road, S., Çelik, A., Yaman, H., Turan, S., Kara, A., Kara, F., Zhu, B., Qu, X., ... Tang, S. (2018). No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析Title. *Transcommunication*, 53(1), 1–8.
<http://www.tfd.org.tw/opencms/english/about/background.html%0Ahttp://dx.doi.org/10.1016/j.cirp.2016.06.001%0Ahttp://dx.doi.org/10.1016/j.powtec.2016.12.055%0Ahttps://doi.org/10.1016/j.ijfatigue.2019.02.006%0Ahttps://doi.org/10.1016/j.matlet.2019.04.024%0A>
- Daanoune, I., Abdennaceur, B., & Ballouk, A. (2021). A comprehensive survey on LEACH-based clustering routing protocols in Wireless Sensor Networks.

Ad Hoc Networks, 114(January), 102409.

<https://doi.org/10.1016/j.adhoc.2020.102409>

Daanoun, I., Baghdad, A., & Ballouk, A. (2021). Improved LEACH protocol for increasing the lifetime of WSNs. *International Journal of Electrical and Computer Engineering*, 11(4), 3106–3113.

<https://doi.org/10.11591/ijece.v11i4.pp3106-3113>

El-Sayed, H. H., Abd-Elgaber, E. M., Zanaty, E. A., Alsubaei, F. S., Almazroi, A. A., & Bakheet, S. S. (2024). An efficient neural network LEACH protocol to extended lifetime of wireless sensor networks. *Scientific Reports*, 14(1), 26943. <https://doi.org/10.1038/s41598-024-75904-1>

El Khediri, S., Selmi, A., Khan, R. U., Moulahi, T., & Lorenz, P. (2024). Energy efficient cluster routing protocol for wireless sensor networks using hybrid metaheuristic approach's. *Ad Hoc Networks*, 158(March), 103473.

<https://doi.org/10.1016/j.adhoc.2024.103473>

García, L., Parra, L., Jimenez, J. M., Lloret, J., & Lorenz, P. (2020). IoT-based smart irrigation systems: An overview on the recent trends on sensors and iot systems for irrigation in precision agriculture. *Sensors (Switzerland)*, 20(4).

<https://doi.org/10.3390/s20041042>

Heinzelman, W. R., Chandrakasan, A., & Balakrishnan, H. (2000). Energy-efficient communication protocol for wireless microsensor networks.

Proceedings of the Annual Hawaii International Conference on System Sciences, 2000-Janua(c), 1–10.

Jasmine Lizy, P., & Chenthalir Indra, N. (2021). Metaheuristic energy efficient protocol for heterogeneous WSN. *Materials Today: Proceedings*, xxxx.

<https://doi.org/10.1016/j.matpr.2021.01.232>

Kennelly, R. J. (1996). IEEE standards for physical and data communications. In *Biomedical Instrumentation and Technology* (Vol. 30, Issue 2).

Lyashenko, I. A., Popov, V. L., Pohrt, R., & Borysiuk, V. (2023). High-Precision Tribometer for Studies of Adhesive Contacts. *Sensors*, 23(1).

<https://doi.org/10.3390/s23010456>

Ramteke, D. J., & Boke, A. (2018). *Modification of LEACH Protocol in Wireless Sensor Network : A Review*. 6(5), 1639–1642.

- Ridaryanto, Refi Kautsar Firmansyah, Rano Kartono, A. M. S. (2015). International Journal of Advanced Trends in Computer Science and Engineering. *E3S Web of Conferences*, 4(2), 15–21.
- Rouissi, N., Gharsellaoui, H., & Bouamama, S. (2019). Improvement of watermarking-LEACH algorithm based on trust for wireless sensor networks. *Procedia Computer Science*, 159, 803–813.
<https://doi.org/10.1016/j.procs.2019.09.239>
- Salamah, I., Suzanzeffi, S., & Ningrum, S. S. (2023). Implementation of Fuzzy Logic in Soil Moisture and Temperature Control System for Araceae Plants Based on LoRa. *PROtek : Jurnal Ilmiah Teknik Elektro*, 10(3), 184–192.
<https://doi.org/10.33387/protk.v10i3.6390>
- Zadeh, L. A. (1975). The concept of a linguistic variable and its application to approximate reasoning-III. *Information Sciences*, 9(1), 43–80.
[https://doi.org/10.1016/0020-0255\(75\)90017-1](https://doi.org/10.1016/0020-0255(75)90017-1)
- Abdulzahra, A. M. K., Al-Qurabat, A. K. M., & Abdulzahra, S. A. (2023). Optimizing energy consumption in WSN-based IoT using unequal Clustering and sleep scheduling methods. *Internet of Things (Netherlands)*, 22(March), 100765. <https://doi.org/10.1016/j.iot.2023.100765>
- Abu-Mahfouz, A. M., Hamam, Y., Page, P. R., Djouani, K., & Kurien, A. (2016). Real-time Dynamic Hydraulic Model for Potable Water Loss Reduction. *Procedia Engineering*, 154, 99–106.
<https://doi.org/10.1016/j.proeng.2016.07.426>
- Achroufene, A., Chelik, M., & Bouadem, N. (2021). Modified CSMA/CA protocol for real-time data fusion applications based on clustered WSN. *Computer Networks*, 196(December 2020), 108243.
<https://doi.org/10.1016/j.comnet.2021.108243>
- Al-Ali, A. R., Nabulsi, A. Al, Mukhopadhyay, S., Awal, M. S., Fernandes, S., & Ailabouni, K. (2020). IoT-solar energy powered smart farm irrigation system. *Journal of Electronic Science and Technology*, 30(40), 1–14.
<https://doi.org/10.1016/J.JNLEST.2020.100017>
- Al-Sodairi, S., & Ouni, R. (2018). Reliable and energy-efficient multi-hop LEACH-based Clustering protocol for Wireless Sensor Networks. *Sustainable Computing: Informatics and Systems*, 20, 1–13.
<https://doi.org/10.1016/j.suscom.2018.08.007>
- Al Rantisi, M. A., Mapp, G., & Gemikonakli, O. (2017). A smart sensor grid to

enhance irrigation techniques in Jordan using a novel event-based routing protocol. *Multimodal Technologies and Interaction*, 1(2).
<https://doi.org/10.3390/mti1020009>

- Ali, S., & Kumar, R. (2022). Hybrid energy efficient network using firefly algorithm, PR-PEGASIS and ADC-ANN in WSN. *Sensors International*, 3(July 2021). <https://doi.org/10.1016/j.sintl.2021.100154>
- Alkalbani, A. S., Mantoro, T., & Md Tap, A. O. (2016). Improved modified reputation-base trust for *Wireless Sensor Networks* security. *Indian Journal of Science and Technology*, 9(37).
<https://doi.org/10.17485/ijst/2016/v9i37/92135>
- Almasri, A., Khalifeh, A., & Al-Agtash, S. (2022). SCSAP: Spiral Clustering Based on Selective Activation Protocol for industrial tailored WSNs. *Journal of Industrial Information Integration*, 27(January), 100332.
<https://doi.org/10.1016/j.jii.2022.100332>
- Alrajeh, N. A., Bashir, M., & Shams, B. (2013). Localization techniques in *Wireless Sensor Networks*. *International Journal of Distributed Sensor Networks*, 2013. <https://doi.org/10.1155/2013/304628>
- Amir, S., & Kusrini. (n.d.). *Prediksi Kebutuhan Nasabah Dengan Teknik Data Mining Dalam Mendukung Strategi Pemasaran Bank*.
- Ampatzidis, Y., Partel, V., & Costa, L. (2020). Agrovie: Cloud-based application to process, analyze and visualize UAV-collected data for precision agriculture applications utilizing artificial intelligence. *Computers and Electronics in Agriculture*, 174(February), 105457.
<https://doi.org/10.1016/j.compag.2020.105457>
- Arsana, I. G. K. D., & Kariada, I. K. (2019). Effect of toposequence on rice (*Oryza sativa* L.) by intermittent irrigation in Bali. *IOP Conference Series: Earth and Environmental Science*, 393(1). <https://doi.org/10.1088/1755-1315/393/1/012077>
- Asha, A., Arunachalam, R., Poonguzhali, I., Urooj, S., & Alelyani, S. (2023). Optimized RNN-based performance prediction of IoT and WSN-oriented smart city application using improved honey badger algorithm. *Measurement: Journal of the International Measurement Confederation*, 210(January), 112505. <https://doi.org/10.1016/j.measurement.2023.112505>
- Astuti, L. D., & Wibisono, W. (2017). Peningkatan Network Lifetime Pada *Wireless Sensor Network* Menggunakan Clustered Shortest Geopath Routing (C-SGP) Protocol. *Jurnal Teknologi Informasi Dan Ilmu Komputer*, 4(3), 148. <https://doi.org/10.25126/jtiik.201743336>
- Babu M, V., Kumar, C. N. S. V., Parthiban, S., Padmavathi, U., & Rahman, M. Z. U. (2022). AE-LEACH: An Incremental Clustering Approach for Reducing

- the Energy Consumption in *WSN. Microprocessors and Microsystems*, 93(November 2021), 104602. <https://doi.org/10.1016/j.micpro.2022.104602>
- Bakr, B. A., & Lilien, L. T. (2014). Comparison by simulation of energy consumption and *WSN* lifetime for *LEACH* and *LEACH-SM*. *Procedia Computer Science*, 34, 180–187. <https://doi.org/10.1016/j.procs.2014.07.084>
- Basaran, B., & Günes, F. (2016). Data Clustering. *Analysis Intelligent Multidimensional Data Clustering And*, 31(3), 28–72. <https://doi.org/10.4018/978-1-5225-1776-4.ch002>
- Beliakov, G., Gagolewski, M., & James, S. (2020). Robust fitting for the Sugeno integral with respect to general fuzzy measures. *Information Sciences*, 514, 449–461. <https://doi.org/10.1016/j.ins.2019.11.024>
- Benyezza, H., Bouhedda, M., & Rebouh, S. (2021). Zoning irrigation smart system based on fuzzy control technology and IoT for water and energy saving. *Journal of Cleaner Production*, 302, 127001. <https://doi.org/10.1016/j.jclepro.2021.127001>
- Berthomier, M., Lors, C., Damidot, D., De Larrard, T., Guérandel, C., & Bertron, A. (2021). *LEACHing* of CEM III paste by demineralised or mineralised water at pH 7 in relation with aluminium release in drinking water network. *Cement and Concrete Research*, 143(December 2020). <https://doi.org/10.1016/j.cemconres.2021.106399>
- Bristow, K. L., Šimůnek, J., Helalia, S. A., & Siyal, A. A. (2020). Numerical simulations of the effects furrow surface conditions and fertilizer locations have on plant nitrogen and water use in furrow irrigated systems. *Agricultural Water Management*, 232(January). <https://doi.org/10.1016/j.agwat.2020.106044>
- Camargos, M. O., Bessa, I., D'Angelo, M. F. S. V., Cosme, L. B., & Palhares, R. M. (2020). Data-driven prognostics of rolling element bearings using a novel Error Based Evolving Takagi–Sugeno Fuzzy Model. *Applied Soft Computing Journal*, 96, 106628. <https://doi.org/10.1016/j.asoc.2020.106628>
- Castillo, O., & Melin, P. (2020). Forecasting of COVID-19 time series for countries in the world based on a hybrid approach combining the fractal dimension and fuzzy logic. *Chaos, Solitons and Fractals*, 140, 110242. <https://doi.org/10.1016/j.chaos.2020.110242>
- Chang, W. J., Liu, L. Z., & Ku, C. C. (2011). Passive fuzzy controller design via observer feedback for stochastic takagi-sugeno fuzzy models with multiplicative noises. *International Journal of Control, Automation and Systems*, 9(3), 550–557. <https://doi.org/10.1007/s12555-011-0315-z>
- Chaurasia, S., Kumar, K., & Kumar, N. (2023). MOCRAW: A Meta-heuristic Optimized Cluster head selection based Routing Algorithm for *WSNs*. *Ad*

Hoc Networks, 141(January), 103079.
<https://doi.org/10.1016/j.adhoc.2022.103079>

Chen, J. I.-Z., & P, H. (2021). Enhanced Dragonfly Algorithm based K-Medoid Clustering Model for VANET. *Journal of ISMAC*, 3(1), 50–59.

<https://doi.org/10.36548/jismac.2021.1.005>

Cheng, Y., Hu, T., Li, Y., & Zhong, S. (2020). Consensus of fractional-order multi-agent systems with uncertain topological structure: A Takagi-Sugeno fuzzy event-triggered control strategy. *Fuzzy Sets and Systems*, 1, 1–22.

<https://doi.org/10.1016/j.fss.2020.04.017>

Chowdhury, S., Chowdhury, S. P., & Crossley, P. (2009). *Microgrids and Active Distribution Networks*. Institution of Engineering and Technology.

<https://doi.org/10.1049/PBRN006E>

Daanoune, I., Abdennaceur, B., & Ballouk, A. (2021). A comprehensive survey on LEACH-based Clustering routing protocols in *Wireless Sensor Networks*. *Ad Hoc Networks*, 114(January), 102409.

<https://doi.org/10.1016/j.adhoc.2020.102409>

Daanoune, I., Baghdad, A., & Ullah, W. (2022). Adaptive coding clustered routing protocol for energy efficient and reliable WSN. *Physical Communication*, 52, 101705.

<https://doi.org/10.1016/j.phycom.2022.101705>

Delforge, D., Watlet, A., Kaufmann, O., Van Camp, M., & Vanclooster, M. (2021). Time-series Clustering approaches for subsurface zonation and hydrofacies detection using a real time-lapse electrical resistivity dataset. *Journal of Applied Geophysics*, 184, 104203.

<https://doi.org/10.1016/j.jappgeo.2020.104203>

Derdar, A., Bensiali, N., Adjabi, M., Boutasseta, N., Bouakkaz, M. S., Attoui, I., Fergani, N., & Bouraiou, A. (2022). Photovoltaic energy generation systems monitoring and performance optimization using wireless sensors network and metaheuristics. *Sustainable Computing: Informatics and Systems*, 35(June 2021), 100684.

<https://doi.org/10.1016/j.suscom.2022.100684>

Du, T., Qu, S., Liu, F., & Wang, Q. (2015). An energy efficiency semi-static routing algorithm for WSNs based on HAC Clustering method. *Information Fusion*, 21(1), 18–29.

<https://doi.org/10.1016/j.inffus.2013.05.001>

Edokpayi, J. N., Nkhumeleni, M., Enitan-Folami, A. M., & Olaniyi, F. C. (2022). Water quality assessment and potential ecological risk of trace metals in sediments of some selected rivers in Vhembe district, South Africa. *Physics and Chemistry of the Earth, Parts A/B/C*, May 2020, 103111.

<https://doi.org/10.1016/j.pce.2022.103111>

Eliviani, R., & Bandung, Y. (2023). WSN-IoT Forecast: *Wireless Sensor Network*

Throughput Prediction Framework in Multimedia Internet of Things. *Journal of ICT Research and Applications*, 17(3), 336–355.
<https://doi.org/10.5614/itbj.ict.res.appl.2023.17.3.4>

Fale, M. I., & Abdulsalam, Y. G. (2020). Dr. Flynnx – A First Aid Mamdani-Sugeno-type fuzzy expert system for differential symptoms-based diagnosis. *Journal of King Saud University - Computer and Information Sciences*, xxx. <https://doi.org/10.1016/j.jksuci.2020.04.016>

Farooqi, M. Z., Tabassum, S. M., Rehmani, M. H., & Saleem, Y. (2014). A survey on network coding: From traditional wireless networks to emerging cognitive radio networks. *Journal of Network and Computer Applications*, 46, 166–181. <https://doi.org/10.1016/j.jnca.2014.09.002>

Fernandes, R. F., de Almeida, M. B., & Brandão, D. (2020). Performance Evaluation of Asynchronous *Multi channel*/MAC Protocol for WSN. *Wireless Personal Communications*, 113(2), 1115–1133. <https://doi.org/10.1007/s11277-020-07270-w>

Fernando, W. A. M., Ilankoon, I. M. S. K., Rabbani, A., & Chong, M. N. (2020). Applicability of pore networks to evaluate the inter-particle flow in heap LEACHing. *Hydrometallurgy*, 197(April), 105451. <https://doi.org/10.1016/j.hydromet.2020.105451>

Fischer, M. S., & Fischer, M. C. (2024). Cost-effective, open-source light shutters with Arduino control. *HardwareX*, 19(June), e00548. <https://doi.org/10.1016/j.ohx.2024.e00548>

Fraigniaud, P. (2005). Greedy routing in tree-decomposed graphs. *Lecture Notes in Computer Science*, 3669, 791–802. https://doi.org/10.1007/11561071_70

Frey, H., & Stojmenović, I. (2005). Geographic and Energy-Aware Routing in Sensor Networks. In *Handbook of Sensor Networks: Algorithms and Architectures*. <https://doi.org/10.1002/047174414X.ch12>

Geetha, V., Kallapur, P. V., & Tellajeera, S. (2012). Clustering in *Wireless Sensor Networks*: Performance Comparison of LEACH & LEACH-C Protocols Using NS2. *Procedia Technology*, 4, 163–170. <https://doi.org/10.1016/j.protcy.2012.05.024>

Gharge, A. P., & Hadia, S. K. (2024). Improving WSN Performance through Fuzzy-Based Traffic Data Analysis. *Journal of Electrical Systems*, 20(1), 55–65. <https://doi.org/10.52783/jes.663>

Gurram, G. V., Shariff, N. C., & Biradar, R. L. (2022). A Secure Energy Aware Meta-Heuristic Routing Protocol (SEAMHR) for sustainable IoT-Wireless Sensor Network (WSN). *Theoretical Computer Science*, 930, 63–76. <https://doi.org/10.1016/j.tcs.2022.07.011>

- Hadipour, M., Derakhshandeh, J. F., & Shiran, M. A. (2020). An experimental setup of multi-intelligent control system (MICS) of water management using the Internet of Things (IoT). *ISA Transactions*, 96, 309–326.
<https://doi.org/10.1016/j.isatra.2019.06.026>
- Harb, H. M. H., & Desuky, A. A. S. (2011). Adaboost Ensemble with Genetic Algorithm Post Optimization for Intrusion Detection. *Update*, 2(5), 1.
<https://doi.org/10.1.1.402.9250>
- Hu, T., He, Z., Zhang, X., & Zhong, S. (2020). Event-triggered consensus strategy for uncertain topological fractional-order multiagent systems based on Takagi–Sugeno fuzzy models. *Information Sciences*, xxx.
<https://doi.org/10.1016/j.ins.2020.11.005>
- Hung, H. D., Duy, T. T., & Voznak, M. (2020). Secrecy outage performance of multi-hop LEACH networks using power beacon aided cooperative jamming with jammer selection methods. *AEU - International Journal of Electronics and Communications*, 124, 153357.
<https://doi.org/10.1016/j.aeue.2020.153357>
- Ilham, W., Fajri, N., & Cirebon, K. (2020). Menggunakan Metode Fuzzy Tsukamoto Pada. 10(1), 71–82.
- Jaiswal, S., & Ballal, M. S. (2020). Fuzzy inference based irrigation controller for agricultural demand side management. *Computers and Electronics in Agriculture*, 175(April), 105537.
<https://doi.org/10.1016/j.compag.2020.105537>
- Jasmine Lizy, P., & Chenthalir Indra, N. (2021). Metaheuristic energy efficient protocol for heterogeneous WSN. *Materials Today: Proceedings*, xxx.
<https://doi.org/10.1016/j.matpr.2021.01.232>
- Kapil Arasu, S., & Prakash, J. (2020). Design and implementation of Takagi–Sugeno fuzzy model based control scheme for the continuous stirred tank reactor. *IFAC-PapersOnLine*, 53(1), 447–452.
<https://doi.org/10.1016/j.ifacol.2020.06.075>
- Karray, F., Jmal, M. W., Garcia-Ortiz, A., Abid, M., & Obeid, A. M. (2018). A comprehensive survey on wireless sensor node hardware platforms. *Computer Networks*, 144, 89–110.
<https://doi.org/10.1016/j.comnet.2018.05.010>
- Karyaningsih, D. (2020). Implementation of Fuzzy Mamdani Method for Traffic Lights Smart City in Rangkasbitung, Lebak Regency, Banten Province (Case Study of the Traffic Light T-junction *Jurnal KomtekInfo*, 7(3), 176–185.
<http://lppm.upiyptk.ac.id/ojsupi/index.php/KOMTEKINFO/article/view/1398>

- Kavitha, V., & Ganapathy, K. (2022). Galactic swarm optimized convolute network and cluster head elected energy-efficient routing protocol in *WSN. Sustainable Energy Technologies and Assessments*, 52(PB), 102154. <https://doi.org/10.1016/j.seta.2022.102154>
- Krishnan, R. S., Julie, E. G., Robinson, Y. H., Raja, S., Kumar, R., Thong, P. H., & Son, L. H. (2020). Fuzzy Logic based Smart Irrigation System using Internet of Things. *Journal of Cleaner Production*, 252, 119902. <https://doi.org/10.1016/j.jclepro.2019.119902>
- Kwong, K. H., Wu, T. T., Mchie, C., & Andonovic, I. (2007). A Self-organizing Multi channel Medium Access Control (SMMAC) protocol for *Wireless Sensor Networks. Proceedings of the Second International Conference on Communications and Networking in China, ChinaCom 2007*, 845–849. <https://doi.org/10.1109/CHINACOM.2007.4469516>
- Lavanya, G., Rani, C., & Ganeshkumar, P. (2019). An automated low cost IoT based Fertilizer Intimation System for smart agriculture. *Sustainable Computing: Informatics and Systems*, 100300. <https://doi.org/10.1016/j.suscom.2019.01.002>
- Lee, S. H., Choi, J. Y., Hur, S. O., Taniguchi, M., Masuhara, N., Kim, K. S., Hyun, S., Choi, E., Sung, J. hoon, & Yoo, S. H. (2020). Food-centric interlinkages in agricultural food-energy-water nexus under climate change and irrigation management. *Resources, Conservation and Recycling*, 163(August), 105099. <https://doi.org/10.1016/j.resconrec.2020.105099>
- LI, R., GUO, Y., NGUANG, S. K., & CHEN, Y. (2018). Takagi-Sugeno fuzzy model identification for turbofan aero-engines with guaranteed stability. *Chinese Journal of Aeronautics*, 31(6), 1206–1214. <https://doi.org/10.1016/j.cja.2018.04.010>
- Li, Z., Wang, J., Higgs, R., Zhou, L., & Yuan, W. (2017). Design of an Intelligent Management System for Agricultural Greenhouses Based on the Internet of Things. *Proceedings - 2017 IEEE International Conference on Computational Science and Engineering and IEEE/IFIP International Conference on Embedded and Ubiquitous Computing, CSE and EUC 2017*, 2, 154–160. <https://doi.org/10.1109/CSE-EUC.2017.212>
- Liu, Y. (2021). Simulation of art design of indoor furnishings based on FPGA and internet of things system. *Microprocessors and Microsystems*, 83(December 2020), 104023. <https://doi.org/10.1016/j.micpro.2021.104023>
- Maalej, I., Ben Halima Abid, D., & Rekik, C. (2018). Active fault tolerant control design for stochastic Interval Type-2 Takagi-Sugeno fuzzy model. *International Journal of Intelligent Computing and Cybernetics*, 11(3), 404–422. <https://doi.org/10.1108/IJICC-04-2017-0039>

- Mahapatra, R. P., & Yadav, R. K. (2015). Descendant of *LEACH* Based Routing Protocols in *Wireless Sensor Networks*. *Procedia Computer Science*, 57, 1005–1014. <https://doi.org/10.1016/j.procs.2015.07.505>
- Malik, P. K., Sharma, R., Singh, R., Gehlot, A., Satapathy, S. C., Alnumay, W. S., Pelusi, D., Ghosh, U., & Nayak, J. (2021). Industrial Internet of Things and its Applications in Industry 4.0: State of The Art. *Computer Communications*, 166(August 2020), 125–139. <https://doi.org/10.1016/j.comcom.2020.11.016>
- Manzoor, B., Javaid, N., Rehman, O., Akbar, M., Nadeem, Q., Iqbal, A., & Ishfaq, M. (2013). Q-*LEACH*: A new routing protocol for *WSNs*. *Procedia Computer Science*, 19, 926–931. <https://doi.org/10.1016/j.procs.2013.06.127>
- Meshram, C., Ibrahim, R. W., Obaid, A. J., Meshram, S. G., Meshram, A., & El-Latif, A. M. A. (2020). Fractional chaotic maps based short signature scheme under human-centered IoT environments. *Journal of Advanced Research*. <https://doi.org/10.1016/j.jare.2020.08.015>
- Mikrokontroler, B. (2017). *Weather is one of the important factors in supporting human activities . The difference of weather between another place caused by the changes of air temperature , humidity and air pressure . Parameters that are considered for predicting weather are air t.* 05(2), 119–128.
- Mkongwa, K. G., Liu, Q., & Wang, S. (2021). An adaptive backoff and dynamic clear channel assessment mechanisms in IEEE 802.15.4 MAC for wireless body area networks. *Ad Hoc Networks*, 120(May), 102554. <https://doi.org/10.1016/j.adhoc.2021.102554>
- Mohinur Rahaman, M., & Azharuddin, M. (2022). *Wireless Sensor Networks in agriculture through machine learning: A survey*. *Computers and Electronics in Agriculture*, 197(April), 106928. <https://doi.org/10.1016/j.compag.2022.106928>
- Moorthi, & Thiagarajan, R. (2020a). Energy consumption and network connectivity based on Novel-*LEACH*-POS protocol networks. *Computer Communications*, 149(October 2019), 90–98. <https://doi.org/10.1016/j.comcom.2019.10.006>
- Moorthi, & Thiagarajan, R. (2020b). Energy consumption and network connectivity based on Novel-*LEACH*-POS protocol networks. *Computer Communications*, 149(August 2019), 90–98. <https://doi.org/10.1016/j.comcom.2019.10.006>
- Mounce, S. R., Pedraza, C., Jackson, T., Linford, P., & Boxall, J. B. (2015). Cloud based machine learning approaches for leakage assessment and management in smart water networks. *Procedia Engineering*, 119(1), 43–52. <https://doi.org/10.1016/j.proeng.2015.08.851>

- N, M., & S, V. (2022). Hierarchical autoregressive bidirectional least-mean-square algorithm for data aggregation in WSN based IoT network. *Advances in Engineering Software*, 173(August), 103275. <https://doi.org/10.1016/j.advengsoft.2022.103275>
- Nawkhare, R., & Singh, D. (2024). Optimizing Ad-Hoc Routing Protocols in WSN to Enhance QoS Parameters Using Evolutionary Computation Algorithms. *International Journal of Computer Networks and Applications*, 11(2), 232–247. <https://doi.org/10.22247/ijcna/2024/224448>
- Nigussie, E., Olwal, T., Musumba, G., Tegegne, T., Lemma, A., & Mekuria, F. (2020). IoT-based Irrigation Management for Smallholder Farmers in Rural Sub-Saharan Africa. *Procedia Computer Science*, 177, 86–93. <https://doi.org/10.1016/j.procs.2020.10.015>
- Novák, V., Pavlík, J., Stočes, M., Vaněk, J., & Jarolímek, J. (2020). Welfare with IoT technology using fuzzy logic. *Agris On-Line Papers in Economics and Informatics*, 12(2), 111–118. <https://doi.org/10.7160/aol.2020.120210>
- Pachayappan, M., Ganeshkumar, C., & Sugundan, N. (2020). Technological implication and its impact in agricultural sector: An IoT Based Collaboration framework. *Procedia Computer Science*, 171, 1166–1173. <https://doi.org/10.1016/j.procs.2020.04.125>
- Pal, A., & Nasipuri, A. (2017). Distributed routing and channel selection for multi channel Wireless Sensor Networks. *Journal of Sensor and Actuator Networks*, 6(3). <https://doi.org/10.3390/jsan6030010>
- Parvathi Sangeetha, B., Kumar, N., Ambalgi, A. P., Abdul Haleem, S. L., Thilagam, K., & Vijayakumar, P. (2022). IOT based smart irrigation management system for environmental sustainability in India. *Sustainable Energy Technologies and Assessments*, 52(PA), 101973. <https://doi.org/10.1016/j.seta.2022.101973>
- Perveen, S., & Medicine, A. (2017). *Phytochemical and Biological Studies on Bougainvillea glabra The Islamia University of Bahawalpur Session 2015-2017*.
- Rahmawati, L., Widya Sihwi, S., & Suryani, E. (2016). Analisa Clustering Menggunakan Metode K-Means Dan Hierarchical Clustering (Studi Kasus : Dokumen Skripsi Jurusan Kimia, Fmipa, Universitas Sebelas Maret). *Jurnal Teknologi & Informasi ITSmart*, 3(2), 66. <https://doi.org/10.20961/its.v3i2.654>
- Ramos Emmendorfer, L., & de Paula Canuto, A. M. (2021). A generalized average linkage criterion for hierarchical agglomerative clustering. *Applied Soft Computing*, 100, 106990. <https://doi.org/10.1016/j.asoc.2020.106990>

- Rehan, W., Fischer, S., Rehan, M., & Rehmani, M. H. (2017). A comprehensive survey on multichannel routing in *Wireless Sensor Networks*. *Journal of Network and Computer Applications*, 95(November 2016), 1–25. <https://doi.org/10.1016/j.jnca.2017.07.006>
- Rethfeldt, M., Brockmann, T., Beichler, B., Haubelt, C., & Timmermann, D. (2021). Adaptive *multi channel*Clustering in ieee 802.11s wireless mesh networks†. *Sensors*, 21(21). <https://doi.org/10.3390/s21217215>
- Rizky, R., Mustafid, & Mantoro, T. (2022). Improved Performance on Wireless Sensors Network Using *Multi channel*Clustering Hierarchy. *Journal of Sensor and Actuator Networks*, 11(4), 73. <https://doi.org/10.3390/jsan11040073>
- Sabale, K., & Mini, S. (2022). Path planning mechanism for mobile anchor-assisted localization in *Wireless Sensor Networks*. *Journal of Parallel and Distributed Computing*, 165, 52–65. <https://doi.org/10.1016/j.jpdc.2022.03.015>
- Sachithanandam, V., D., J., V.S., B., & Manoharan, M. (2025). Deep reinforcement learning and enhanced optimization for real-time energy management in *Wireless Sensor Networks*. *Sustainable Computing: Informatics and Systems*, 45(December 2024), 101071. <https://doi.org/10.1016/j.suscom.2024.101071>
- Salim, A., Osamy, W., Aziz, A., & Khedr, A. M. (2022). SEEDGT: Secure and energy efficient data gathering technique for IoT applications based *WSNs*. *Journal of Network and Computer Applications*, 202(March), 103353. <https://doi.org/10.1016/j.jnca.2022.103353>
- Salz, T., Ostroff, J. S., Nightingale, C. L., Atkinson, T. M., Davidson, E. C., Jinna, S. R., Kriplani, A., Lesser, G. J., Lynch, K. A., Mayer, D. K., Oeffinger, K. C., Patil, S., Salner, A. L., & Weaver, K. E. (2021). The Head and Neck Survivorship Tool (HN-STAR) Trial (WF-1805CD): A protocol for a cluster-randomized, hybrid effectiveness-implementation, pragmatic trial to improve the follow-up care of head and neck cancer survivors. *Contemporary Clinical Trials*, 107(February), 106448. <https://doi.org/10.1016/j.cct.2021.106448>
- Santhameena, S., & J., M. (2022). Group acknowledgement mechanism for beacon-enabled *Wireless Sensor Networks*. *Computer Communications*, 187(June 2021), 93–102. <https://doi.org/10.1016/j.comcom.2022.02.001>
- Sembiring, R. W., Zain, J. M., & Embong, A. (2011). *A Comparative Agglomerative Hierarchical Clustering Method to Cluster Implemented Course*. 2(12), 1–6. <http://arxiv.org/abs/1101.4270>
- Singh, M., & Soni, S. K. (2021). Network lifetime enhancement of *WSNs* using

correlation model and node selection algorithm. *Ad Hoc Networks*, 114, 102441. <https://doi.org/10.1016/j.adhoc.2021.102441>

Sivakumar, P., & Radhika, M. (2018). Performance Analysis of *LEACH-GA* over *LEACH* and *LEACH-C* in *WSN*. *Procedia Computer Science*, 125, 248–256. <https://doi.org/10.1016/j.procs.2017.12.034>

Sudharshan, N., Karthik, A. V. S. K., Kiran, J. S. S., & Geetha, S. (2019). Renewable Energy Based Smart Irrigation System. *Procedia Computer Science*, 165(2019), 615–623. <https://doi.org/10.1016/j.procs.2020.01.055>

Sumiharto, R., Ilma, R., & Rif' Atunnisa, R. (2019). Metode Routing Protokol *LEACH* pada Jaringan Sensor Nirkabel Studi Kasus Sistem Pemantauan Suhu dan Kelembaban Udara. *IJEIS (Indonesian Journal of Electronics and Instrumentation Systems)*, 9(1), 87. <https://doi.org/10.22146/ijeis.44449>

Syahputri, Z., Sutarman, S., & Siregar, M. A. P. (2024). Determining The Optimal Number of K-Means Clusters Using The Calinski Harabasz Index and Krzanowski and Lai Index Methods for Grouping Flood Prone Areas In North Sumatra. *Sinkron*, 9(1), 571–580. <https://doi.org/10.33395/sinkron.v9i1.13246>

Syamsiyah, J., Rahayu, Herawati, A., & Binafsihi, W. (2020). Study of levels water salinity on the growth of varieties of shallots (*Allium ascalonicum* L) in Alfisols. *IOP Conference Series: Earth and Environmental Science*, 423(1). <https://doi.org/10.1088/1755-1315/423/1/012065>

Taneja, M., Byabazaire, J., Jalodia, N., Davy, A., Olariu, C., & Malone, P. (2020). Machine learning based fog computing assisted data-driven approach for early lameness detection in dairy cattle. *Computers and Electronics in Agriculture*, 171(February), 105286. <https://doi.org/10.1016/j.compag.2020.105286>

Thakur, D., Kumar, Y., & Vijendra, S. (2020). Smart Irrigation and Intrusions Detection in Agricultural Fields Using I.o.T. *Procedia Computer Science*, 167(2019), 154–162. <https://doi.org/10.1016/j.procs.2020.03.193>

Tiglao, N. M., Alipio, M., Balanay, J. V., Saldivar, E., & Tiston, J. L. (2020). Agrinex: A low-cost wireless mesh-based smart irrigation system. *Measurement: Journal of the International Measurement Confederation*, 161, 107874. <https://doi.org/10.1016/j.measurement.2020.107874>

Victor, C., Campos, S., Braga, M. F., & Frezzatto, L. (2020). An auxiliary system discretization approach to Takagi-Sugeno fuzzy models ☆. *Fuzzy Sets and Systems*, 1(426207), 1–12. <https://doi.org/10.1016/j.fss.2020.12.013>

Visconti, P., de Fazio, R., Velázquez, R., Del-Valle-soto, C., & Giannoccaro, N. I. (2020). Development of sensors-based agri-food traceability system remotely

managed by a software platform for optimized farm management. *Sensors (Switzerland)*, 20(13), 1–43. <https://doi.org/10.3390/s20133632>

- Wang, G., & Ma, J. (2011). Study of corporate credit risk prediction based on integrating boosting and random subspace. *Expert Systems with Applications*, 38(11), 13871–13878. <https://doi.org/10.1016/j.eswa.2011.04.191>
- Wang, T., Liu, R., & Qi, G. (2022). Multi-classification assessment of bank personal credit risk based on multi-source information fusion. *Expert Systems with Applications*, 191(November 2021), 116236. <https://doi.org/10.1016/j.eswa.2021.116236>
- Wu, P., Bai, L., Lin, W., & Wang, X. (2018). Mechanism and dynamics of hydrodynamic-acoustic cavitation (HAC). *Ultrasonics Sonochemistry*, 49(February), 89–96. <https://doi.org/10.1016/j.ultsonch.2018.07.021>
- Xia, Y., Zhao, J., He, L., Li, Y., & Niu, M. (2020). A novel tree-based dynamic heterogeneous ensemble method for credit scoring. *Expert Systems with Applications*, 159, 113615. <https://doi.org/10.1016/j.eswa.2020.113615>
- Yiğit, M., Incel, Ö. D., & Güngör, V. Ç. (2014). On the interdependency between multi channelscheduling and tree-based routing for WSNs in smart grid environments. *Computer Networks*, 65, 1–20. <https://doi.org/10.1016/j.comnet.2014.02.025>
- Yue, H., Jiang, Q., Yin, C., & Wilson, J. (2020). Research on data aggregation and transmission planning with Internet of Things technology in WSN multi channelaware network. *Journal of Supercomputing*, 76(5), 3298–3307. <https://doi.org/10.1007/s11227-018-2565-5>
- Zeineldin, H. H., Mohamed, Y. A.-R. I., Khadkikar, V., & Pandi, V. R. (2013). A Protection Coordination Index for Evaluating Distributed Generation Impacts on Protection for Meshed Distribution Systems. *IEEE Transactions on Smart Grid*, 4(3), 1523–1532. <https://doi.org/10.1109/TSG.2013.2263745>
- Zeng, Y. F., Chen, C. T., & Lin, G. F. (2023). Practical application of an intelligent irrigation system to rice paddies in Taiwan. *Agricultural Water Management*, 280(September 2022), 108216. <https://doi.org/10.1016/j.agwat.2023.108216>
- Zhang, J., & Mao, H. (2021). Multi-factor identity authentication protocol and indoor physical exercise identity recognition in Wireless Sensor Network. *Environmental Technology and Innovation*, 23, 101671. <https://doi.org/10.1016/j.eti.2021.101671>
- Zhang, X., & Wang, Y. (2021). Research on prepaid account financing model based on embedded system and Internet of Things. *Microprocessors and Microsystems*, 82(December 2020), 103935.

<https://doi.org/10.1016/j.micpro.2021.103935>

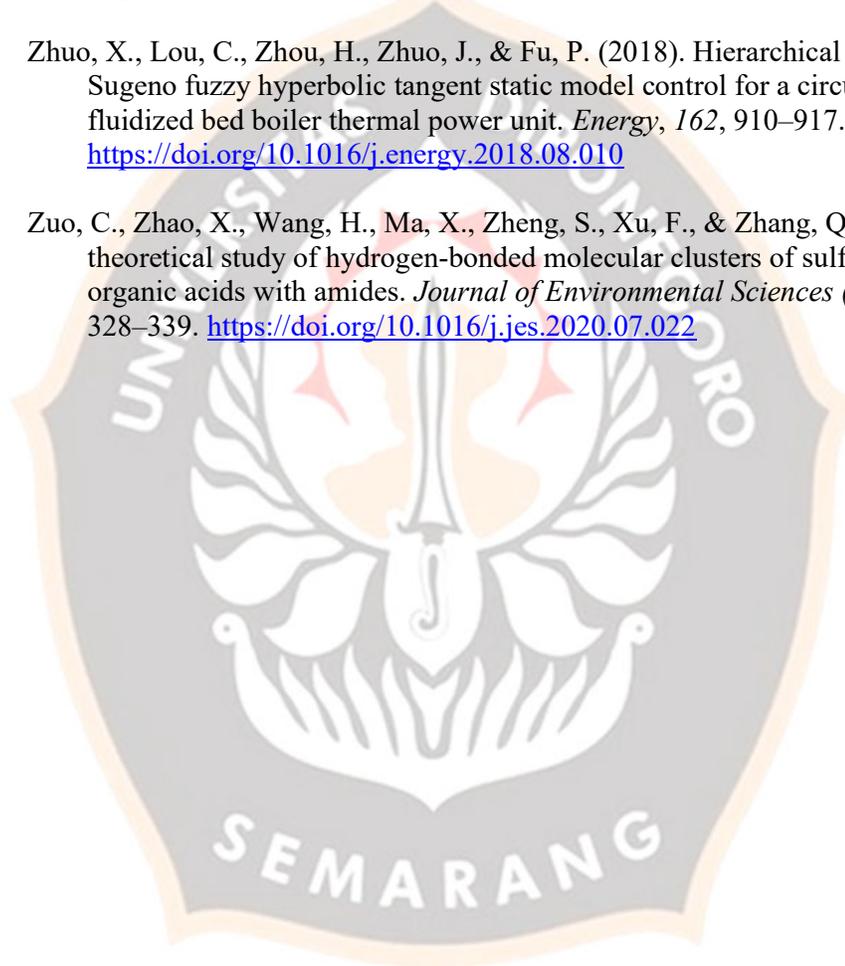
Zhu, Y., Ting, K. M., Carman, M. J., & Angelova, M. (2021). CDF Transform-and-Shift: An effective way to deal with datasets of inhomogeneous cluster densities. *Pattern Recognition*, 107977.

<https://doi.org/10.1016/j.patcog.2021.107977>

Zhuo, X., Lou, C., Zhou, H., Zhuo, J., & Fu, P. (2018). Hierarchical Takagi-Sugeno fuzzy hyperbolic tangent static model control for a circulating fluidized bed boiler thermal power unit. *Energy*, 162, 910–917.

<https://doi.org/10.1016/j.energy.2018.08.010>

Zuo, C., Zhao, X., Wang, H., Ma, X., Zheng, S., Xu, F., & Zhang, Q. (2021). A theoretical study of hydrogen-bonded molecular clusters of sulfuric acid and organic acids with amides. *Journal of Environmental Sciences (China)*, 100, 328–339. <https://doi.org/10.1016/j.jes.2020.07.022>



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