DAFTAR PUSTAKA

Adityas Y., *et al.* (2021). Water Quality Monitoring System With Parameter of pH, Temperature, Turbidity, and Salinity Based on Internet of Things. *JISA (Jurnal Informatika dan Sains),* 4(2), pp. 138-143.

Aggarwal L., & Sahoo, B. (2018). Back Propagation Algorithm for Computerized Pape Evaluation Using Neural Network. *IJSRST,* 4(5), pp. 719-723.

Ahmad R., Wazirali R., & Abu-Ain, T. (2022). Machine Learning for Wireless Sensor Networks Security: An Overview of Challenges and Issues. *Sensors,* 22(13), p. 4730.

Ahmed A. M., & Shah, S. M. A. (2017). Application of Adaptive Neuro-Fuzzy Inference System (Anfis) to Estimate the Biochemical Oxygen Demand (BOD) of Surma River. *Journal of King Saud University-Engineering Sciences,* 29(3), pp. 237-243.

Ahmed E. S. A., & Yousef M. E. (2019). Internet of Things in Smart Environment: Concept, Applications, Challenges, and Future Directions. *World Scientific News,* 134(1), pp. 1-51.

Ahmed U., *et al*. (2019). Efficient Water Quality Prediction Using Supervised Machine Learning. *Water,* 11(11), p. 2210.

Aisah, S., Sulistiyowati, E., & Saputro, D. E. (2017). Biomonitoring Anggota Ordo Plecoptera sebagai Indikator Kualitas Ekosistem Hulu Sungai Gajah Wong dan Sungai Code Yogyakarta. *Integrated Lab Journal.* 5 (1): 29-34.

Aldhyani T. H. H., *et al.* (2020). Water Quality Prediction Using Artificial Intelligence Algorithms. *Applied Bionics and Biomechanics,* Volume 2020, pp. 1-12.

Alfatihah, A., Latuconsina, H., & Prasetyo, H. D. (2022). Analisis Kualitas Air Berdasarkan Parameter Fisika dan Kimia di Perairan Sungai Patrean Kabupaten Sumenep. *AQUACOASTMARINE: Journal of Aquatic and Fisheries Sciences*. 1 (2): 76-84.

Alhamri R. Z., & Dianta, A. F. (2019). *Design of Automatic Drain System for Freshwater Fish Pond Based on Zigbee Networks and SMS Gateway.* Semarang, IEEE. Fourth International Conference on Informatics and Computing (ICIC).

Ambrose R. (2017). *Suplement to Water Quality Analysis Simulation Program (WASP) User Documentation.* 1 ed. Atlanta, Georgia: US Enviromental Protection Agency.

Anggraini I., & Syahwanti H. (2022). Pemetaan Sebaran Kandungan Tingkat Keasamaan (pH) Air Sungai Mahap Kabupaten Sekadau. *E-Journal Teknologi Infrastruktur,* 1(1), pp. 1 - 6.

Antony A. P., *et al.* (2020). A Review of Practice and Implementation of the Internet of Things (IoT) for Smallholder Agriculture. *Sustainability,* 12(9), p. 3750.

Asrini N. K., Adnyana I. W. S., & Rai, I. N. (2017). Studi Analisis Kualitas Air di Daerah Aliran Sungai Pakerisan Provinsi Bali. *ECOTROPHIC,* 11(2), pp. 101-107.

Awaludin F. F. (2022). Permasalahan Pencemaran dan Penyediaan Air Bersih di Perkotaan dan Pedesaan. *Retrieved November,* Volume 8, pp. 1-10.

Azamathulla H. M., Rathnayake U., & Shatnawi A. (2018). Gene Expression Programming and Artificial Neural Network to Estimate Atmospheric Temperature in Tabuk, Saudi Arabia. *Applied Water Science,* 8(6), pp. 184-191.

Badan Pusat Statistik Provinsi DIY (2021). *Hasil Sensus Penduduk 2020.* [Online] Available at: https://yogyakarta.bps.go.id/pressrelease/2021/01/21/1077/hasil-sensus-penduduk-2020.html [Accessed 25 November 2022].

Babu C. N., & Reddy B. E. (2014). A Moving-Average Filter-Based Hybrid ARIMA-ANN Model for Forecasting Time Series Data. *Applied Soft Computing,* Volume 23, pp. 27-38.

Bashira N., *et al.* (2020). Water Quality Assessment of Lower Jhelum Canal in Pakistan by Using Geographic Information System (GIS). *Groundwater for sustainable development,* Volume 10, p. 100357.

Baskoro, F., Alamsyah, F., & Suprianto, B. (2021). Peramalan Beban Listrik Harian Menggunakan Artificial Neural Network. *Jurnal Teknik Elektro*, *10*(1), pp 203-209.

Bekti R. D., Suryowati K., & Tanty H. (2017). Mapping of Mn and Pb as Effect of Landfill Pollutant Based on Ordinary Kriging Interpolation. *American Journal of Environmental Science,* 13(3), pp. 245-250.

Bekti R. D., & Irwansyah, E. (2014). Mapping of Illiteracy and Information and Communication Technology Indicators Using Geographically Weighted. *Journal of Mathematics and Statistics,* 10(2), pp. 103-138.

Bhawiyuga A., & Yahya W. (2019). Sistem Monitoring Kualitas Air Kolam Budidaya Menggunakan Jaringan Sensor Nirkabel Berbasis Protokol LoRa. *Jurnal Teknologi Informasi dan Ilmu Komputer (JTIIK),* 6(1), pp. 99-106.

Budiyanto E., *et al.* (2021). Pengembangan Prototipe Sistem Monitoring Kualitas Air Tanah Karst. *Geomedia,* 19(2), pp. 95-103.

Chabuk A., *et al.* (2020). Water Quality Assessment Along Tigris River (Iraq) Using Water Quality Index (WQI) and GIS Software. *Arabian Journal of Geosciences,* 13(654), pp. 1-23.

Chopade S., *et al.* (2021). An Energy-Efficient River Water Pollution Monitoring System in Internet of Things. *IEEE Transactions on Green Communications and Networking,* 5(2), pp. 693-702.

Chowdurya M. S. U., et al. (2019). IoT Based Real-time River Water Quality Monitoring System. *Procedia Computer Science,* Volume 155, pp. 161-168.

Danardono D., & Fikriyah V. N. (2021). *Sistem Informasi Geografis dan Aplikasinya di Bidang Geografis.* 1 ed. Surakarta: Muhammadiyah University Press.

Dandge K. P., & Patil S. S. (2022). Spatial Distribution of Ground Water Quality Index Using Remote Sensing and GIS Techniques. *Applied Water Science,* 12(7), pp. 1-18.

Daroini, T. A., & Arisandi, A. (2020). Analisis BOD (Biological Oxygen Demand) di Perairan Desa Prancak Kecamatan Sepulu, Bangkalan. *Juvenil: Jurnal Ilmiah Kelautan dan Perikanan.* 1(4): 558-566.

Demetillo A. T., Japitana J., & Taboada E. B. (2019). A System for Monitoring Water Quality in Alarge Aquatic Area Using Wireless Sensor Network Technology. *Sustainable Environment Research,* 29(1), pp. 1-9.

DLHK, DIY, (2021). *Informasi Kinerja Pengelolaan Lingkungan Hidup Daerah (IKPLHD),* Yogyakarta: Dinas Lingkungan Hidup dan Kehutanan DIY.

Eddy P. (2002). *Konsep-konsep Dasar Sistem Informasi Geografis.* 1 ed. Bandung: CV. Informatika.

Elisyah, N., *et al*. 2024. Analysis of Prospective Teachers' Abilities to Designing Artificial Intelligence-Based Learning Media. In *Proceedings of Malikussaleh International Conference on Multidisciplinary Studies (MICoMS)* Vol. 4, pp. 00012-00012.

Etikasari B., *et al*. (2020). *Wireless Sensor Network Development in Unmanned Aerial Vehicle (UAV) for Water Quality Monitoring System.* Semarang, IOP Conference Series: Earth and Environmental Science. IOP Publishing.

European *Environment* Agency (EEA). (2018). *Water Pollution from Urban Wastewater Treatment Plants*. EEA Report No 12/2018.

Fatturahman F., & Irawan I. (2019). Monitoring Filter Pada Tangki Air Menggunakan Sensor Turbidity Berbasis Arduino Mega 2560 Via SMS Gateway. *Jurnal Komputasi,* 7(2), pp. 19-29.

Fauzia, A. Z., Suhartini, S., & Sudarsono, S. (2016). Kualitas perairan di Sungai Bedog, Yogyakarta berdasarkan keanekaragaman plankton. *Kingdom (The Journal of Biological Studies)*. 5(6): 50-61.

Fauzi Y., Susilo B., & Maya Z. M. (2009). Analisis Kesesuaian Lahan Wilayah Pesisir Kota Bengkulu melalui Perancangan Model Spasial dan Sistem Informasi Geografis (SIG). *Forum Geografi,* 23(2), pp. 101-111.

Febrianti F., Wibowo S. A., & Vendya N. (2021). Implementasi IoT (Internet of Things) Monitoring Kualitas Air dan Sistem Administrasi Pada Pengelola Air Bersih Skala Kecil. *JATI (Jurnal Mahasiswa Teknik Informatika),* 5(1), pp. 171-178.

Fell J., Pead J., & Winter K. (2018). Low-Cost Flow Sensors: Making Smart Water Monitoring Technology Affordable. *IEEE Consumer Electronics Magazine,* 8(1), pp. 72-77.

Fitriasa, M. & Sudarsono (2022). Analisis Indeks Trofik-Saprobik sebagai Indikator Kualitas Air di Aliran Sungai Code Daerah Istimewa Yogyakarta (DIY). *Jurnal Edukasi Biologi.* 8 (2): 131-146.

Gaafar M., *et al.* (2020). A practical GIS-Based Hazard Assessment Framework for Water Quality in Stormwater Systems. *Journal of Cleaner Production,* Volume 245, pp. 118855.

Gea, L., Hariono, M., Tuhumena, L., Misbach, I., dan Haryati, K. 2024. Kualitas Air dan Indeks Pencemaran pada Sungai Arbes Desa Batu Merah Kota Ambon. *Jurnal Ilmu Kelautan dan Perikanan Papua.* 7(1): 80 - 87.

Geetha S. A., & Sivakumar C. (2021). *Appraisement of Phreatic Water Characteristic Using Water Quality Index Modeling and GIS in Industrialized Region.* India, Materials Today. Proceedings, volume 43, pp. 1568-1581

Haerani D., Syafrudin S., & Budi S. S. (2019). *Review Modeling of Solid Waste Transportation Routes Using Geographical Information System (GIS).* Semarang, E3S Web of Conferences.

Hanisa, E., Nugraha, W. D., & Sarminingsih, A. (2017). Penentuan Status Mutu Air Sungai Berdasarkan Metode Indekskualitas Air–National Sanitation Foundation (IKA-NSF) Sebagai Pengendalian Kualitas Lingkungan (Studi

Kasus: Sungai Gelis, Kabupaten Kudus, Jawa Tengah). *Jurnal Teknik Lingkungan.* *6*(1): 1-15.

Hidayat M., & Mardiyantoro N. (2020). Sistem Pemantauan dan Pengendalian pH Air Berbasis IoT Menggunakan Platform Arduino. *Jurnal Penelitian dan Pengabdian Kepada Masyarakat UNSIQ,* 7(1), pp. 65-70.

Hindriani H. (2013). Pengendalian Pencemaran Sungai Ciujung Berdasarkan Analisis Daya Tampung Beban Pencemaran. *Jurnal Sumber Daya Air,* 9(2), pp. 169-184.

Hossain M., Sujaul I., & Nasly M. (2014). Application of QUAL2Kw for Water Quality Modeling in The Tunggak River, Kuantan, Pahang, Malaysia. *Research Journal of Recent Sciences,* 3(6), pp. 6-14.

Hutabarat, B. F., *et al.* (2023). Sistem basis data pemantauan parameter air berbasis Internet of Things (IoT) dengan platform ThingSpeak. J*OURNAL ONLINE OF PHYSICS, 8(2), 42-50.*

Ibrahim, R., Selintung, M., & Zubair, A. (2023). Peningkatan Kemampuan Masyarakat Dalam Mengolah Air Limbah Domestik Melalui Pelatihan Pembuatan Alat Perangkap Lemak (Grease Trap) Sederhana. *Jurnal Tepat.* 6 (1): 86-94.

Ilyas, *et al*. (2013). Penurunan Kadar TDS Pada Limbah Tahu Dengan Teknologi Biofilm Menggunakan Media Biofilter Kerikil Hasil Letusan Gunung Merapi Dalam Bentuk Random. *Jurnal Teknik Lingkungan*. 2 (3): 1-10.

Ionescu T. B. (2021). Leveraging Graphical User Interface Automation for Generic Robot Programming. *Robotics,* 10(3), pp. 1-23.

Irianto E., Triweko R., & Yudianto D. (2010). Pengembangan Kriteria Status Mutu Ekosistem Danau Sebagai Bagian Dari Indikator Pengelolaan Terpadu Wilayah Sungai. *Jurnal Teknik Hidraulik,* 1(1), pp. 27-42.

Irwansyah E. (2013). *Sistem Informasi Geografis: Prinsip Dasar dan Pengembangan Aplikasi.* 1 ed. Yogyakarta: DigiBook.

Istianto J. E. (2014). *Pengantar Elektronika dan Instrumentasi Pendekatan Project Arduino dan Android.* 1 ed. Yogyakarta: Penerbit Andi.

Iswahyudi C., *et al.* (2020). *Application of Greenhouse Gas Monitoring System Using General Packet Radio Service on GSM Network.* Yogyakarta, IOP Conference Series: Materials Science and Engineering.

Jawad H. M., *et al.* (2017). Energy-Efficient Wireless Sensor Networks for Precision Agriculture: A Review. *Sensors,* 17(8), p. 1781.

Kadam A. K., *et al.* (2019). Prediction of Water Quality Index Using Artificial Neural Network and Multiple Linear Regression Modelling Approach in Shivganga River Basin, India. *Modeling Earth Systems and Environment,* Volume 5, p. 951–962.

Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, (2017). *Petunjuk Teknis Restorasi Kualitas Air Sungai.* Jakarta: KLHK.

Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia, (2020). *Laporan Kualitas Air Sungai di Indonesia.* Jakarta: KLHK.

Khan Y., & See C. S. (2016). *Predicting and Analyzing Water Quality Using Machine Learning: A Comprehensive Model.* IEEE Long Island Systems, Applications and Technology Conference (LISAT), pp 1-6.

Kouadri S., *et al.* (2021). Performance of Machine Learning Methods in Predicting Water Quality Index Based on Irregular Data Set: Application on Illizi Region (Algerian Southeast). *Applied Water Science volume,* 11(12), p. 190.

Kraak M., & Ormeling F. (2007). *Kartografik Visualisasi Data Geospasial.* 1 ed. Yogyakarta: Gadjah Mada University Press.

Kudubun, R., Kisworo, & Rahardjo, D. (2020). Pengaruh Tata Guna Lahan, Tipe Vegetasi Riparian, dan Sumber Pencemar Terhadap Kualitas Air Sungai Winongo di Daerah Istimewa Yogyakarta. *Rumah Jurnal UIN Alauddin.* (1): 392-400.

Kusumadewi S. (2003). *Artificial Intelligence (Teknik dan Aplikasinya).* 1 ed. Yogyakarta: Graha Ilmu.

Liao H., & Sun W. (2010). Forecasting and Evaluating Water Quality of Chao Lake Based on an Improved Decision Tree Method. *Procedia Environmental Sciences,* Volume 2, pp. 970-979.

Li L., *et al.* (2019). Water Quality Prediction Based on Recurrent Neural Network and Improved Evidence Theory: A Case Study of Qiantang River, China. *Environmental Science and Pollution Research,* Volume 26, p. 19879–19896.

Liu P., *et al.* (2019). Analysis and Prediction of Water Quality Using LSTM Deep Neural Networks in IoT Environment. *Sustainability ,* 11(7), p. 2058.

Li X., & Song J. (2015). *A New ANN-Markov Chain Methodology for Water Quality Prediction.* Killarney, Ireland, International Joint Conference on Neural Networks (IJCNN).

Mabrouki J., Azrour M., & Hajjaji S. E. (2021). Use of Internet of Things for Monitoring and Evaluating Water's Quality: A Comparative Study. *International Journal of Cloud Computing,* 10(5-6), pp. 633-644.

Machairiyah M., Nasution Z., & Slamet B. (2020). Pengaruh Pemanfaatan Lahan Terhadap Kualitas Air Sungai Percut Dengan Metode Indeks Pencemaran (IP). *Limnotek: Perairan Darat Tropis di Indonesia,* 27(1), pp. 13-25.

Majid M., *et al.* (2022). Applications of Wireless Sensor Networks and Internet of Things Frameworks in the Industry Revolution 4.0: A Systematic Literature Review. *Sensors,* 22(6), p. 2087.

Mamun K. A., *et al.* (2019). Smart Water Quality Monitoring System Design and KPIs Analysis: Case Sites of Fiji Surface Water. *Sustainability,* 11(24), p. 7110.

Marganingrum, D., Roosmini, D., Pradono, P., & Sabar, A. (2013). Diferensiasi Sumber Pencemar Sungai Menggunakan Pendekatan Metode Indeks Pencemaran (IP) (Studi Kasus: Hulu DAS Citarum). *Riset Geologi dan*

Pertambangan. 23 (1): 41-52.

Masruroh M., & Mauladi K. (2020). Perbandingan Metode Regresi Linear dan Neural Network Backpropagation Dalam Prediksi Nilai Ujian Nasional Siswa SMP Menggunakan Software R. *JOUTICA,* 5(1), pp. 331-336.

Maulana Y. Y., Wiranto G., & Kurniawan D. (2017). Online Monitoring Kualitas Air Pada Budidaya Udang Berbasis WSN dan IoT. *INKOM Journal,* 10(2), pp. 81-86.

Meiyanti Y., Laila A., & Kahar S. (2014). Kajian Area Tercemar Pada Jaringan Pembuangan Limbah Batik Kota Pekalongan Menggunakan Sistem Informasi Geografis. *Jurnal Geodesi Undip,* 3(1), pp. 77-89.

Menteri Negara Lingkungan Hidup, (2010). *PerMen Negara Lingkungan Hidup Nomor 01 Tahun 2010 tentang Tata Laksana Pengendalian Pencemaran Air.* [Online] Available at: https://jdih.maritim.go.id/id/peraturan-menteri-negara-lingkungan-hidup-no-01-tahun-2010 [Accessed 20 November 2022].

Mishra, B., & Kertesz, A. (2020). The use of MQTT in M2M and IoT systems: A survey. *Ieee Access*, 8, 201071-201086.

Muehrcke P. (1972). *Thematic Cartography, Resource Paperi No. 19.* 1 ed. Washington, DC: Association of American Geographers.

Mulyono S. (2016). *Riset Operasi.* 2 ed. Jakarta: Mutra Wacana Media.

Muzaidi I., Ansari R., & Anggarini E. (2021). Sistem Monitoring Perairan Untuk Sanitasi Kualitas Air Layak Pakai Menggunakan Wireless Sensor Networks. *Jurnal Konstruksia,* 13(1), pp. 80-86.

Naillah A., Budiarti L. Y., & Heriyani F. (2021). Literature Review: Analisis Kualitas Air Sungai dengan Tinjauan Parameter pH, Suhu, BOD, COD, DO terhadap Coliform. *Homeostasis,* 4(2), pp. 487-494.

Nasar, M., & Kausar, M. A. (2019). Suitability of influxdb database for iot applications. *International Journal of Innovative Technology and Exploring*

Engineering, 8(10), 1850-1857.

Ngatilah Y., & Kurniawan O. (2016). Kebijakan Perbaikan Kualitas Air Sungai Pegirikan Dengan Metode Sistem Dinamik. *Tekmapro: Journal of Industrial Engineering and Management,* 9(1), pp. 1-24.

Novianta M. A. (2013). *Alat Deteksi Dini Bahaya Banjir dengan Penyampaian Informasi Tinggi Muka Air Menggunakan Data Logger Berbasis GSM Gateway.* Surabaya, Prosiding Seminar Nasional Sains dan Teknologi Terapan.

Novianta M. A., *et al.* (2023). *Development of Embedded System for Water Quality Monitoring Using Multi-Sensors for Multi-Nodes.* Yogyakarat, AIP Conference Proceedings. AIP Publishing.

Novianta M. A., & Setyaningsih E. (2015a). *Sistem Blackbox Sebagai Pemantauan Lalu Lintas Kereta Api Secara Online Menggunakan Web Server dan Mobile Device.* Purwokerto, Prosiding Senatek Fakultas Teknik UMP.

Novianta M. A., & Setyaningsih E. (2015b). Sistem Informasi Monitoring Kereta Api Berbasis Web Server Menggunakan Layanan GPRS. *Jurnal Momentum,* 17(2), pp. 58-67.

Novianta M. A., & Setyaningsih E. (2017). *Alat Monitoring Kecepatan dan Arah Angin Berbasis Arduino Uno Sebagai Pendukung Mitigasi Bencana Dengan Informasi SMS Gateway.* Malang, FTI ITN Malang.

Novilyansa E. (2017). *Analisis Kualitas Air di Wilayah Sungai Seputih-Sekampung Berbasis Sistem Informasi Geografis.* [Online] Available at: http://digilib.unila.ac.id/28465/4/TESIS%20TANPA%20BAB% 20PEMBAHASAN.pdf [Accessed 2022 November 2022].

Nurhayati. (2015). Jaringan Saraf Tiruan Backpropagation Untuk Menentukan Tingkat Pencemaran Air. *Jurnal Sistem Informasi dan Teknologi Informasi,* 4(2), pp. 124-131.

Nurjanah, P. (2018). Analisis pengaruh curah hujan terhadap kualitas air parameter mikrobiologi dan status mutu air di Sungai Code, Yogyakarta.

Nurjaya I. K., Estananto E., & Murti A. (2022). Pemodelan Sistem Kendali Suhu Otomatis Pada Smart Poultry Farm Menggunakan Metode Jaringan Saraf Tiruan. *e-Proceeding of Engineering,* 9(2), pp. 136-144.

Pal, A., & Prakash, P. K. S. (2017). *Practical time series analysis: master time series data processing, visualization, and modeling using python.* Packt Publishing Ltd.

Pelletier G. J., Chapra S. C., & Tao H. (2006). QUAL2Kw - A Framework for Modeling Water Quality in Streams and Rivers Using a Genetic Algorithm for Calibration. *Jurnal Envsoft,* 21(3), pp. 419-425.

Peraturan Daerah DIY, (2018). *https://jdih.jogjaprov.go.id/hukum/peraturan-daerah-daerah-istimewa-yogyakarta-nomor-5-tahun-2019-tentang-rencana-tata-ruang-wilayah-daerah-istimewa-yogyakarta-tahun-2019-2038* [Online] Available at: https://jdih.jogjaprov.go.id/file/download?hash=e6c647fba45a5 6ad6a0dd5c80187287f&id=5550
[Accessed 10 September 2023].

Peraturan Pemerintah Republik Indonesia, (2021). *https://peraturan.go.id/id/pp-no-22-tahun-2021.* [Online] Available at: https://jdih.setkab.go.id/PUUdoc/ 176367/PP_Nomor_22_Tahun_2021.pdf
[Accessed 20 November 2022].

Perdana D., Naufal J., & Alinursafa I. (2021). Performance Evaluation of River *International Journal of Computers Communications & Control,* 16(4), pp. 1-13.

Permana, D. I., & Widyastuti, M. (2013). Studi perubahan kualitas air Sungai Winongo tahun 2003 dan 2012. *Jurnal Bumi Indonesia*. 2 (2): 53-62.

Pohan D. A. S., Budiyono B., & Syafrudin, S. (2016). Analisis Kualitas Air Sungai Guna Menentukan Peruntukan Ditinjau dari Aspek Lingkungan. *Jurnal Ilmu*

Lingkungan, *14*(2), p. 63-71.

Pohan S., Warsito B., & Suryono S. (2020). Backpropagation Artificial Neural Network for Prediction Plant Seedling Growth. *Journal of Physics: Conference Series,* 1524(1), p. 012147.

Pratami, V. A. Y., Setyono, P dan Sunarto. (2018). Zonasi, Keanekaragaman dan Pola Migrasi Ikan Di Sungai Keyang Kabupaten Ponorogo Jawa Timur. *Jurnal Ilmu Lingkungan*. 16 (1): 78-85.

Pratiwi, A. D., Widyorini, N. N., & Rahman, A. (2019). Analisis Kualitas Perairan Berdasarkan Total Bakteri Coliform Di Sungai Plumbon, Semarang An Analysis of Waters Quality Based on Coliform Bacteria in Plumbon River, Semarang. *Management of Aquatic Resources Journal*. 8 (3): 211-220.

Pujar P. M., *et al.* (2019). Real-Time Water Quality Monitoring Through Internet of Things and ANOVA-Based Analysis: A Case Study on River Krishna. *Applied Water Science,* 10(1), pp. 1-16.

Pule M., Yahya A., & Chuma J., (2017). Wireless Sensor Networks: A Survey on Monitoring Water Quality. *Journal of Applied Research and Technology,* 15(6), pp. 562-570.

Purwanto P. (2021). *Pengembangan dan Penerapan Permodelan Lingkungan.* 1 ed. Semarang: Sekolah Pascasarjana Universitas Diponegoro Semarang.

Putra P. B., *et al.* (2022). Multi-Purpose Riparian Forest Design for Conservation and Reduction of Non-point Source Pollution in The Lake Toba Catchment. *IOP Conference Series: Earth and Environmental Science*, 950(1), pp. 012058.

Putra V. H. C., Hendayun M., & Yustianto P. (2022). Early Warning System and Monitoring of River Water Quality Based on Internet of Things. *Devotion Journal of Community Service,* 3(13), pp. 2485-2496.

Kumar S., & Reshma R. (2023). *Predicting and Analyzing Water Quality Using Machine Learning for Smart Aquaculture*. Erode, India, International Conference on Sustainable Computing and Data Communication Systems

197

(ICSCDS), pp 354-359

Rachmi, E., Nugrahalia, M., & Karim, A. (2016). Pemeriksaan Kualitas Air Sungai Sei Kera Medan dengan Metode Spektrophotometri. *BIOLINK (Jurnal Biologi Lingkungan Industri Kesehatan)*. 3 (1): 44-55.

Rahayu, Y., Juwana, I., & Marganingrum, D. (2018). Kajian Perhitungan Beban Pencemaran Air Sungai Di Daerah Aliran Sungai (DAS) Cikapundung dari Sektor Domestik. 2 (1): 61-71.

Rahman, A., *et al*. (2021). Industrial Wastewater and Its Impact on Surface Water Quality. *Environmental Research Journal*, 28(4), pp. 456-465.

Raja M., *et al.*, (2020). *Instrumental Analysis of Groundwater and Water Quality Index in Fuljhore, Durgapur using GIS.* Durgapur, India, National Conference on Emerging Trends on Sustainable Technology and Engineering Applications (NCETSTEA), pp 1-4.

Ramadhawati, D., Wahyono, H.D., & Santoso, A.D. (2021). Pemantauan Kualitas Air Sungai Cisadane Secara Online dan Analisis Status Mutu Air Menggunakan Metode Storet. 13 (2): 76-91.

Rehman A., *et al*. (2022). A Revisit of Internet of Things Technologies for Monitoring and Control Strategies in Smart Agriculture. *Agronomy,* 12(1), p. 127

Riadi M. (2020). *kajianpustaka.com.* [Online] Available at: https://www.kajianpustaka.com/2020/03/analytical-hierarchy-process-ahp-proses-hirarki-analitik-pha.html, [Accessed 19 Februari 2023].

Ridhawani, F., Ghalib, M., & Nurrachmi, I. (2017). Tingkat kesuburan perairan berdasarkan kelimpahan fitoplankton dan nitrat-fosfat terhadap tingkat kekeruhan muara sungai Rokan Kabupaten Rokan Hilir. *Jurnal Perikanan dan Kelautan*. 22 (2): 10-17.

Ridwan, M. & Pamungkas, D.W. (2015). Keanekaragaman vegetasi pohon di sekitar sumber mata air di Kecamatan Panekan, Kabupaten Magetan, Jawa

Timur. *Pros Sem Nas Biodiv Indon.* 1 (6): 1375-1379.

Rimbakita (2020). *Informasi Kehutanan dan Lingkungan Hidup!.* [Online] Available at: https://rimbakita.com/air-permukaan/ [Accessed 25 November 2022].

Rismawanto T. H., Binilang A., & Halim F. (2017). Perencanaan Sistem Penyediaan Air Bersih di Desa Dumoga II Kecamatan Dumoga Timur Kabupaten Bolaang Mongondow. *Jurnal Sipil Statik,* 5(5), pp. 295-304.

Rompas, R. G., Hendratta, L. A., & Legrans, R. R. (2024). Analisis Kandungan Besi (Fe), Fluorida (F) Dan Fecal Coliform Di Sungai Panasen, Desa Panasen, Kabupaten Minahasa. *TEKNO.* 22 (89): 1671-1682.

Salam A. (2020). *Internet of Things for Environmental Sustainability and Climate Change.* 1 ed. Switzerland: Internet of Things for Sustainable Community Development. Internet of Things.

Salim T. I., *et al.* (2017). *Portable and Online Water Quality Monitoring System Using Wireless Sensor Network.* Jakarta, 2nd International Conference on Automation, Cognitive Science, Optics, Micro Electro-Mechanical System, and Information Technology (ICACOMIT).

Santosa R. A., *et al.* (2021). Utilization of Wireless Sensor Network to Monitor Citarum River Quality for Milkfish Cultivation in Karawang Regency. *Jurnal Serambi Engineering,* 6(4), pp. 2395-2407.

Santoso, S. (2023). Evaluasi Pengujian Kualitas Air Sungai Opak Di Kabupaten Bantul Periode Bulan Januari Tahun 2022. *Jurnal Rekayasa Lingkungan.* 23 (1): 8-16.

Saputra G. A., & Endra R. Y. (2020). *Analisis Cara Kerja Sensor Ph-E4502c Menggunakan Mikrokontroler Arduino Uno Untuk Merancang Alat Pengendalian pH Air Pada Tambak.* Bandar Lampung: Universitas Bandar Lampung.

Saputra Y., Hiswara A., & Sari R. (2020). Sistem Informasi Geografis Lokasi Kualitas Air Pada PDAM Patriot Bekasi. *Journal of Students 'Research in Computer Science,* 1(2), pp. 165-178.

Saravanan K., *et al.* (2018). Real-time Water Quality Monitoring Using Internet of Things in SCADA. *Environmental monitoring and assessment,* 190(556), pp. 1-16.

Sari, E.K., & Wijaya, O.E. (2019). Penentuan status mutu air dengan metode indeks pencemaran dan strategi pengendalian pencemaran sungai ogan kabupaten Ogan Komering Ulu. *Jurnal Ilmu Lingkungan.*17(3): 486-491.

Savitri, A.R. (2017). Kualitas Air Tanah Bebas di Kelurahan Prenggan Kecamatan Kota Gede Yogyakarta Daerah Istimewa Yogyakarta. *Geo Educasia.* 2 (8): 1018-1034.

Seran, M.S., Daud, Y., & Blegur, W.A. (2019). Uji Kualitas Air pada Sumber Mata Air Waipidi Desa Wairasa Kecamatan Umbu Ratu Nggay Barat Kabupaten Sumba Tengah. *Jurnal Pendidikan dan Sains Biologi.* 2(2): 57-64.

Setiawan A., Widyastuti M., & Hadi M. (2018). Water Quality Modeling for Pollutant Carrying Capacity Assessment Using Qual2Kw in Bedog River. *Indonesian Journal of Geography,* 50(1), pp. 49-56.

Shafi U., *et al.* (2018). *Surface Water Pollution Detection Using Internet of Things.* Islamabad, Pakistan, 15th international conference on smart cities: improving quality of life using ICT & IoT (HONET-ICT).

Sianipar M. P., Sumarno S., & Tambunan H. S. (2021). Implementasi Jaringan Syaraf Tiruan Backpropagation Untuk Memprediksi Jumlah Pemasangan Instalasi Air Pada PDAM Tirtauli Pematangsiantar. *TIN: Terapan Informatika Nusantara,* 1(9), pp. 489-498.

Simatupang J. W., Hamidah S., & Bonifasius R. (2022). Sistem Monitoring Online Jaringan Sensor Nirkabel: Survei Kualitas Air dan Udara di Daerah Karawang. *Serambi Engineering,* VII(2), pp. 3191-3204.

Singh S., Bhardwaj A., & Verma V. (2020). Remote Sensing and GIS Based Analysis of Temporal Land Use/Land Cover and Water Quality Changes in Harike Wetland Ecosystem, Punjab, India. *Journal of Environmental Management,* Volume 262, p. 110355.

Siswanto T. A., & Rony M. A. (2018). Aplikasi Monitoring Suhu Air Untuk Budidaya Ikan KOI Dengan Menggunakan Mikrokontroller Arduino Nano Sensor Suhu DS18B20 Waterproof dan TEC1- Pada Dunia KOI. *Skanika,* 1(1), pp. 40-46.

Sobri S., *et al.* (2021). Automatic Water Quality Monitoring System With Real-Time Data Type Based on Internet of Things (IOT) for Vannamei Shrimp Farming. *Urecol Journal. Part E: Engineering,* 1(2), pp. 52-63.

Solution, P. S. P., (2019). *News & Events.* [Online] Available at: http://www.myspsolution.com/news-events/cara-kerja-konsep-internet-of-things/ [Accessed 20 November 2022].

Sudarsono S., Novianta M. A., & Parwati, C. I. (2019). *Application of Internet of Things (IoTY) on Air Pollution Monitoring Database System.* Semarang, E3S Web of Conferences.

Sudarsono S., Novianta M. A., & Purnawan P. (2018a). *Development of SMS Gateway Information System for Detecting Air Quality.* Semarang, IOP Conference Series: Materials Science and Engineering.

Sudarsono S., Novianta M. A., & Purnawan P. (2018b). *Performance of AVR Microcontroller-SMS Gateway System for Detecting SO2 and NO2.* Semarang, E3S Web of Conferences. EDP Sciences.

Sukiman, M. E. P., Tendean, M., & Sulastriningsih, S. (2021). Analisis Kualitas Air Sungai Poopoh Kecamatan Tombariri Kabupaten Minahasa. *GEOGRAPHIA: Jurnal Pendidikan dan Penelitian Geografi*. 2 (1): 62-67.

Sulistiyowati I., Haris R. A., & Suprayitno E. A. (2019). *Temperature Control System Design Chicken Coop Using Gateway SMS.* Banda Aceh, Journal of

Physics: Conference Series. IOP Publishing.

Suraya S., & Novianta M. A. (2013). *Prototipe Deteksi Gempa Menggunakan Metode Perambatan Gelombang Pada Sensor Getar Berbasis Mikrokontroler Dengan Informasi SMS Gateway.* Solo, LPPM UMS.

Susanti Y., Syafrudin S., & Helmi M. (2020). *Analisa Perubahan Penggunaan Lahan di Daerah Aliran Sungai Serayu Hulu Dengan Pengginderaan Jauh dan Sistem Informasi Geografis.* Semarang, Proceeding Biology Education Conference: Biology, Science, Enviromental, and Learning.

Susilawati, (2019). *Blog UMA.* [Online] Available at: http://susilawati.blog.uma.ac.id/2019/03/18/area-atau-bidang-aplikasi-internet-of-things-iot/ [Accessed 20 November 2022].

Sutardi, A., Suprayogi, S., & Adji, T. N. (2017). Kajian Kualitas Air Tanah Bebas antara Sungai Kuning dan Sungai Tepus di Kecamatan Ngemplak, Yogyakarta, Indonesia. *Majalah Geografi Indonesia.* 31 (1): 31-38.

Syafiqoh U., Sunardi S., & Yudhana A. (2018). Pengembangan Wireless Sensor Network Berbasis Internet of Things untuk Sistem Pemantauan Kualitas Air dan Tanah Pertanian. *Jurnal Informatika: Jurnal Pengembangan IT,* 3(2), pp. 285-289.

Syukron A. (2013). *Pengantar Manajemen Industri.* 1 ed. Jakarta: Graha Ilmu.

Taloor A. K., *et al.* (2020). Spring Water Quality and Discharge Assessment in The Basantar Watershed of Jammu Himalaya Using Geographic Information System (GIS) and Water Quality Index (WQI). *Groundwater for Sustainable Development,* Volume 10, pp. 100364.

Tamaji T., Utama Y. A. K., & Sidharta J. (2022). Jaringan Saraf Tiruan Menggunakan Metode Backpropagation Untuk Prediksi Curah Hujan. *TELEKONTRAN,* 10(1), pp. 30-37.

Temizel T. T., & Casey M. C. (2005). A Comparative Study of Autoregressive Neural Network Hybrids. *Neural Networks,* 18(5-6), pp. 781-789.

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Tripathy B. K., & Anuradha J. (2017). *Internet of Things (IoT): Technologies, Applications, Challenges and Solution.* 1 ed. Boca Raton: CRC Press.

UNESCO. (2019). *World Water Development Report 2019: Leaving No One Behind*. Paris: UNESCO Publishing.

Utama J. P., Syafrudin S., & Nugraha W. D. (2015). Penentuan Daya Tampung Beban Pencemaran Bod dan Fecal Coliform Sungai Plumbon Kota Semarang Dengan Software Qual2e. *Jurnal Teknik Lingkungan,* 4(3), pp. 1-9.

Wahjono H. D. (2016). Penerapan Teknologi Online Monitoring Kualitas Air Untuk DAS Prioritas di Sungai Ciliwung dan Sungai Cisadane. *Jurnal Air Indonesia,* 9(1), pp. 63-77.

Wang F., *et al*. (2021). A Phosphorescence Quenching-Based Intelligent Dissolved Oxygen Sensor on an Optofluidic Platform. *Micromachines,* 12(3), pp. 1-12.

Wanto A. (2019). Prediksi Produktivitas Jagung Indonesia Tahun 2019-2020 Sebagai Upaya Antisipasi Impor Menggunakan Jaringan Saraf Tiruan Backpropagation. *Sintech Journal,* 2(1), pp. 53-62.

Widagda, B. L. A., Nurrochmad, F., & Kamulyan, B. (2021). Pengaruh limbah rumah tangga terhadap kualitas air sungai Gajahwong Code dan Winongo di Yogyakarta. In *Prosiding Seminar Nasional Teknik Lingkungan Kebumian SATU BUMI.* 2 (1): 241-252.

Widyastuti M., & Marfa'i M. A. (2004). Kajian Daya Tampung Sungai Gajahwong Terhadap Beban Pencemaran. *Majalah Geografi Indonesia,* 18(2), pp. 81-97.

Wiriani, E. R. E. (2018). Analisis Kualitas Air Sungai Batanghari Berkelanjutan Di Kota Jambi: Analisis Kualitas Air Sungai Batanghari Berkelanjutan Di Kota Jambi. *Jurnal Khazanah Intelektual.* 2 (2): 219-241.

Wirman R. P., Wardhana I., & Isnaini V. A. (2019). Kajian Tingkat Akurasi Sensor Pada Rancang Bangun Alat Ukur Total Dissolved Solids (TDS) dan Tingkat Kekeruhan Air. *Jurnal Fisika,* 9(1), pp. 37-46.

World Health Organization (WHO). (2018). *Water, Sanitation and Hygiene (WASH)*. Geneva: WHO.

Yan J., *et al*. (2020). A Prediction Model Based on Deep Belief Network and Least Squares SVR Applied to Cross-Section Water Quality. *Water,* 12(7), p. 1929.

Yan J., *et al*. (2019). Application of a Hybrid Optimized BP Network Model to Estimater Water Quality Parameters of Beihai Lakenin Beijing. *Applied Sciences,* 9(9), p.11863.

Yogafanny, E. (2015). Pengaruh aktifitas warga di sempadan sungai terhadap kualitas air Sungai Winongo. *Jurnal Sains dan Teknologi Lingkungan*. 7 (1): 29-40.

Yolanda Y., *et al*. (2023). Hubungan Antara Suhu, Salinitas, Ph, Dan Tds Di Sungai Brang Biji Sumbawa. *Jurnal Teknologi Lingkungan Lahan Basah*. 11 (2): 522-530.

Yoviandianto I. A., Mohammad M., & Arief D. (2019). Pemetaan Distribusi Kualitas Air Untuk Mendukung Pengelolaan Sumberdaya Perairan Dengan Sistem Informasi Geografis, Kasus di Sungai Brantas, Kecamatan Bumiaji. *Journal of Fisheries and Marine Research,* 3(3), pp. 372-380.

Yudhistira, F., & Ambarsari, E. W. (2023). Pendekatan Violin Plot sebagai Pengenalan Pola untuk Interpretasi Data Penjualan Spare Part Komputer. *Journal of Informatics, Electrical and Electronics Engineering*, *2*(4), pp. 107-112.

Yulis, P. A. R. (2018). Analisis kadar logam merkuri (Hg) dan (Ph) air Sungai Kuantan terdampak penambangan emas tanpa izin (PETI). *Orbital: Jurnal Pendidikan Kimia*. 2(1): 28-36.

Zakaria Y., & Michael K. (2017). An Integrated Cloud-Based Wireless Sensor Network for Monitoring Industrial Wastewater Discharged Into Water Sources. *Wireless Sensor Network,* 9(8), pp. 290-301.

Zaman B., & Syafrudin S. (2007). Model Numerik 2-D (Lateral & Longitudinal) Sebaran Polutan Cadmium (Cd) di Muara Sungai (Studi Kasus: Muara Sungai Babon, Semarang). *Jurnal Presipitasi,* 3(2), pp. 1-8.

Zhang X., Li Y., & Cheng X. (2019). Impact of Water Pollution on Human Health and Environmental Sustainability. *Environmental Management and Sustainable Development*, 8(2), pp. 1-17.