

DAFTAR PUSTAKA

- Banbury, C. R., Reddi, V. J., Lam, M., Fu, W., Fazel, A., Holleman, J., Huang, X., Hurtado, R., Kanter, D., Lokhmotov, A., Patterson, D., Pau, D., Seo, J., Sieracki, J., Thakker, U., Verhelst, M., & Yadav, P. (2021). Benchmarking TinyML Systems: Challenges and Direction. *arXiv*. <https://doi.org/10.48550/arXiv.2003.04821>
- Cho, I., Lee, K., Sim, Y. C., Jeong, J.-S., Cho, M., Jung, H., Kang, M., Cho, Y.-H., Ha, S. C., Yoon, K.-J., & Park, I. (2023). Deep-learning-based gas identification by time-variant illumination of a single micro-LED-embedded gas sensor. *Light: Science & Applications*, 12(1), 95. <https://doi.org/10.1038/s41377-023-01120-7>
- Darmawan, N., Sari, I. D., Rudhatin, F., Pranata, A. W., Supratikno, & Yuliana, N. D. (2024). Porcine, bovine, and mixed gelatin identification using SPME-GC-MS and chemometrics. *Halal Studies and Society*, 1(3), 15–19. <https://doi.org/10.29244/hass.1.3.15-19>
- Epping, R., & Koch, M. (2023). On-Site Detection of Volatile Organic Compounds (VOCs). *Molecules*, 28(4), 1598.
- Fataliyev, V. M., Aliyev, K. F., & Salimova, S. A. (2026). Application of gated recurrent units for time series prediction of gas production rates. *International Journal of Petrochemical Science & Engineering*, 8(1), 1-8.
- Freddi, S., Marzuoli, C., Pagliara, S., Drera, G., & Sangaletti, L. (2023). Targeting biomarkers in the gas phase through a chemoresistive electronic nose based on graphene functionalized with metal phthalocyanines. *RSC Advances*, 13(1), 251–263. <https://doi.org/10.1039/D2RA07607A>
- Geng, J., Nie, K., Wang, W., Jiang, S., & Niu, Z. (2024). Study on VOCs of Fishmeal during Storage Based on HS-SPME-GC-MS. *ACS Omega*, 9, 32817-32827.
- Hanifati, F. N., Kusnandar, F., Darmawan, N., Pranata, A. W., & Yuliana, N. D. (2026). Volatilomik Gelatin Ikan dan Babi dengan HS-SPME GC-MS untuk Autentikasi Halal. *Jurnal Teknologi dan Industri Pangan*, 37(1), 55-66. <https://doi.org/10.6066/jtip.2026.37.1.55>
- Ismarti, I., Handoko, D. D., Triyana, K., Salleh, H. M., Fadzillah, N. A., & Nordin, N. F. H. (2022). Study on Volatile Compounds of Gelatine and The Maillard Reaction Products from Different Species Using SPME-GCMS. *Science and Technology Indonesia*, 7(2), 132–139. <https://doi.org/10.26554/sti.2022.7.2.132-139>
- John, A. T., Murugappan, K., Nisbet, D. R., & Tricoli, A. (2021). An Outlook of Recent Advances in Chemiresistive Sensor-Based Electronic Nose Systems for Food Quality and Environmental Monitoring. *Sensors*, 21(7), 2271. <https://doi.org/10.3390/s21072271>
- Kang, M., Cho, I., Park, J., Jeong, J., Lee, K., Lee, B., Del Orbe Henriquez, D., Yoon, K., & Park, I. (2022). High Accuracy Real-Time Multi-Gas Identification by a Batch-Uniform Gas Sensor Array and Deep Learning

- Algorithm. *ACS Sensors*, 7(2), 430–440.
<https://doi.org/10.1021/acssensors.1c01204>
- Khorramifar, A., Karami, H., Lvova, L., Kolouri, A., Łazuka, E., Piłat-Rożek, M., Łagód, G., Ramos, J., Lozano, J., Kaveh, M., & Darvishi, Y. (2023). Environmental Engineering Applications of Electronic Nose Systems Based on MOX Gas Sensors. *Sensors*, 23(12), 5716.
<https://doi.org/10.3390/s23125716>
- Kim, A. R., Kim, H. S., Kang, C. H., & Kim, S. Y. (2023). The Design of the 1D CNN–GRU Network Based on the RCS for Classification of Multiclass Missiles. *Remote Sensing*, 15(3), 577. <https://doi.org/10.3390/rs15030577>
- Kiranyaz, S., Avci, O., Abdeljaber, O., Ince, T., Gabbouj, M., & Inman, D. J. (2021). 1D convolutional neural networks and applications: A survey. *Mechanical Systems and Signal Processing*, 151, 107398.
<https://doi.org/10.1016/j.ymssp.2020.107398>
- Lin, T., Lv, X., Hu, Z., Xu, A., & Feng, C. (2019). Semiconductor Metal Oxides as Chemoresistive Sensors for Detecting Volatile Organic Compounds. *Sensors*, 19(2), 233.
- Lynn, H. M., Pan, S. B., & Kim, P. (2019). A Deep Bidirectional GRU Network Model for Biometric Electrocardiogram Classification Based on Recurrent Neural Networks. *IEEE Access*, 7, 145395–145405.
<https://doi.org/10.1109/ACCESS.2019.2939947>
- Md Dzahir, M. A. S., & Chia, K. S. (2026). Batch Normalization and Dropout Regularization in Developing Lightweight Deep Learning Models for Electronic Nose Gas Classification. *International Journal of Engineering*, 39(9), 2336–2345. <https://doi.org/10.5829/ije.2026.39.09c.19>
- Moon, H. S., Yu, S. Y., Ban, Y., Park, H., Hong, S. J., Kim, K. S., Kim, H.-W., Jeong, E. J., & Shin, E.-C. (2025). Sensomics combined with Chemometrics approaches of enzymatically hydrolyzed animal by-product proteins using biomimetic sensory-based machine perception techniques and gas chromatography-Olfactometry-mass spectrometry (GC-O-MS). *Food Chemistry: X*, 26, 102343.
- Pan, X., Zhang, H., Ye, W., Bermak, A., & Zhao, X. (2019). A Fast and Robust Gas Recognition Algorithm Based on Hybrid Convolutional and Recurrent Neural Network. *IEEE Access*, 7, 100954–100963.
<https://doi.org/10.1109/ACCESS.2019.2930804>
- Pareek, V., Chaudhury, S., & Singh, S. (2021). Online Pattern Recognition of Time-series Gas Sensor Data with Adaptive 2D-CNN Ensemble. *2021 11th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS)*, 679–683.
<https://doi.org/10.1109/IDAACS53288.2021.9660930>
- Pulluri, K. K., & Kumar, V. N. (2022). Qualitative and Quantitative Detection of Food Adulteration Using a Smart E-Nose. *Sensors*, 22(20), 7789.
<https://doi.org/10.3390/s22207789>
- Tan, J., & Xu, J. (2020). Applications of electronic nose (e-nose) and electronic tongue (e-tongue) in food quality-related properties determination: A

- review. *Artificial Intelligence in Agriculture*, 4, 104–115. <https://doi.org/10.1016/j.aiia.2020.06.003>
- Wang, S., Hu, Y., Burgues, J., Marco, S., & Liu, S.-C. (2020). Prediction of Gas Concentration Using Gated Recurrent Neural Networks. *2020 2nd IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS)*, 178–182. <https://doi.org/10.1109/AICAS48895.2020.9073806>
- Xie, X., Wang, B., Wan, T., & Tang, W. (2020). Multivariate Abnormal Detection for Industrial Control Systems Using 1D CNN and GRU. *IEEE Access*, 8, 88348–88359. <https://doi.org/10.1109/ACCESS.2020.2993335>
- Xie, Y., Lyu, S., Zhang, Y., & Cai, C. (2022). Adsorption and Degradation of Volatile Organic Compounds by Metal–Organic Frameworks (MOFs): A Review. *Materials*, 15(21), 7727. <https://doi.org/10.3390/ma15217727>
- Ye, Z., Liu, Y., & Li, Q. (2021). Recent Progress in Smart Electronic Nose Technologies Enabled with Machine Learning Methods. *Sensors*, 21(22), 7620. <https://doi.org/10.3390/s21227620>
- Zhengzhou Winsen Electronics Technology Co., Ltd. (2020). Gas Sensor Statement Datasheet. Zhengzhou: Zhengzhou Winsen Electronics Technology Co., Ltd.
- Zhou, K., & Liu, Y. (2021). Early-Stage Gas Identification Using Convolutional Long Short-Term Neural Network with Sensor Array Time Series Data. *Sensors*, 21(14), 4826. <https://doi.org/10.3390/s21144826>