

References

- Abbasion, S., Rafsanjani, A., Farshidianfar, A., and Irani, N., (2007), "Rolling element bearings multi-fault classification based on the wavelet denoising and support vector machine", *Mechanical Systems and Signal Processing*, Vol.21, No.7, pp.2933–2945, 2007
- Abd-el Malek, M. B., Abdelsalam, A. K., and Hassan, O. E., (2018), "Novel approach using Hilbert Transform for multiple broken rotor bars fault location detection for three phase induction motor", *ISA transactions*, Vol.80,, pp.439–457, 2018
- Abid, F. B., Zgarni, S., and Braham, A., (2018), "Distinct bearing faults detection in induction motor by a hybrid optimized SWPT and aiNet-DAG SVM", *IEEE Transactions on Energy Conversion*, Vol.33, No.4, pp.1692–1699, 2018
- Acosta, G. G., Verucchi, C. J., and Gelso, E. R., (2006), "A current monitoring system for diagnosing electrical failures in induction motors", *Mechanical Systems and Signal Processing*, Vol.20, No.4, pp.953–965, 2006
- Aimer, A. F., Boudinar, A. H., Benouzza, N., and Bendiabdellah, A., (2018), "Induction motor bearing faults diagnosis using Root-AR approach: simulation and experimental validation", *Electrical Engineering*, Vol.100, No.3, pp.1555–1564, 2018
- Ali, M. Z., Shabbir, M. N. S. K., Liang, X., Zhang, Y., and Hu, T., (2019), "Machine learning based fault diagnosis for single and multi-faults in induction motors using measured stator currents and vibration signals", *IEEE Transactions on Industry Applications*, pp.1–1, 2019
- Antoni, J., (2007), "Fast computation of the kurtogram for the detection of transient faults", *Mechanical Systems and Signal Processing*, Vol.21,, pp.108–124, 2007
- Antonino-Daviu, J., Riera-Guasp, M., Folch, J., and Palomares, M., (2006a), "Validation of a new method for the diagnosis of rotor bar failures via wavelet transform in industrial induction machines", *IEEE Transactions on Industry Applications*, Vol.42, No.4, pp.990–996, 2006
- Antonino-Daviu, J., Riera-Guasp, M., Roger-Folch, J., Martínez-Giménez, F., and Peris, A., (2006b), "Application and optimization of the discrete wavelet transform for the detection of broken rotor bars in induction machines", *Applied and Computational Harmonic Analysis*, Vol.21, No.2, pp.268–279, 2006
- Antonino-Daviu, J. A., Riera-Guasp, M., Pineda-Sanchez, M., and Perez, R. B., (2009), "A critical comparison between DWT and Hilbert-Huang-based methods for the diagnosis of rotor bar failures in induction machines", *IEEE Transactions on Industry Applications*, Vol.45, No.5, pp.1794–1803, 2009
- Arkan, M., Perović, D. K., and Unsworth, P., (2001), "Online stator fault diagnosis in induction motors", *IEE Proceedings-Electric Power Applications*, Vol.148, No.6, pp.537–547, 2001
- Aydin, I., Karakose, M., and Akin, E., (2011), "A new method for early fault detection and diagnosis of broken rotor bars", *Energy Conversion and Management*, Vol.52, No.4, pp.1790–1799, 2011
- Ayhan, B., Chow, M.-Y., and Song, M.-H., (2005), "Multiple signature processing-based fault detection schemes for broken rotor bar in induction motors", *IEEE Transactions on Energy Conversion*, Vol.20, No.2, pp.336–343, June 2005
- Ayhan, B., Chow, M.-Y., and Song, M.-H., (2006), "Multiple discriminant analysis and neural-network-based monolith and partition fault-detection schemes for broken rotor bar in induction motors", *IEEE Transactions on Industrial Electronics*, Vol.53, No.4, pp.1298–1308, 2006
- Bacha, K., Salem, S. B., and Chaari, A., (2012), "An improved combination of Hilbert and Park transforms for fault detection and identification in three-phase induction motors", *International Journal of Electrical Power & Energy Systems*, Vol.43, No.1, pp.1006–1016, 2012

- Bachir, S., Tnani, S., Trigeassou, J.-C., and Champenois, G., (2006), "Diagnosis by parameter estimation of stator and rotor faults occurring in induction machines", *IEEE Transactions on Industrial Electronics*, Vol.53, No.3, pp.963–973, 2006
- Ballal, M. S., Khan, Z. J., Suryawanshi, H. M., and Sonolikar, R. L., (2007), "Adaptive Neural Fuzzy Inference System for the Detection of Inter-Turn Insulation and Bearing Wear Faults in Induction Motor", *IEEE Transactions on Industrial Electronics*, Vol.54, No.1, pp.250–258, 2007
- Barendse, P. S., Herndl, B., Khan, M. A., and Pillay, P., (2009), "The application of wavelets for the detection of inter-turn faults in induction machines", In *2009 IEEE International Electric Machines and Drives Conference*, pp. 1401–1407, IEEE
- Bazan, G. H., Scalassara, P. R., Endo, W., Goedtel, A., Godoy, W. F., and Palacios, R. H. C., (2017), "Stator fault analysis of three-phase induction motors using information measures and artificial neural networks", *Electric Power Systems Research*, Vol.143, pp.347–356, 2017
- Bazan, G. H., Scalassara, P. R., Endo, W., Goedtel, A., Palacios, R. H. C., and Godoy, W. F., (2019), "Stator short-circuit diagnosis in induction motors using mutual information and intelligent systems", *IEEE Transactions on Industrial Electronics*, Vol.66, No.4, pp.3237–3246, April 2019
- Behera, H., Dash, P., and Biswal, B., (2010), "Power quality time series data mining using S-transform and fuzzy expert system", *Applied Soft Computing*, Vol.10, No.3, pp.945–955, June 2010
- Bellini, A., (2009), "Quad demodulation: A time-domain diagnostic method for induction machines", *IEEE Transactions on Industry Applications*, Vol.45, No.2, pp.712–719, 2009
- Bellini, A., Filippetti, F., Franceschini, G., Tassoni, C., Passaglia, R., Saottini, M., Tontini, G., Giovannini, M., and Rossi, A., (2002), "On-field experience with online diagnosis of large induction motors cage failures using MCSA", *IEEE Transactions on Industry Applications*, Vol.38, No.4, pp.1045–1053, 2002
- Bellini, A., Filippetti, F., Tassoni, C., and Capolino, G.-A., (2008), "Advances in Diagnostic Techniques for Induction Machines", *IEEE Transactions on Industrial Electronics*, Vol.55, No.12, pp.4109–4126, 2008
- Benbouzid, M. E. H., (2000), "A review of induction motors signature analysis as a medium for faults detection", *IEEE Transactions on Industrial Electronics*, Vol.47, No.5, pp.984–993, 2000
- Benbouzid, M. E. H., Vieira, M., and Theys, C., (1999), "Induction motors' faults detection and localization using stator current advanced signal processing techniques", *IEEE Transactions on power electronics*, Vol.14, No.1, pp.14–22, 1999
- Bessam, B., Menacer, A., Boumehraz, M., and Cherif, H., (2015), "DWT and Hilbert transform for broken rotor bar fault diagnosis in induction machine at low load", *Energy Procedia*, Vol.74, pp.1248–1257, 2015
- Bessam, B., Menacer, A., Boumehraz, M., and Cherif, H., (2016), "Detection of broken rotor bar faults in induction motor at low load using neural network", *ISA Transactions*, Vol.64, pp.241–246, 2016
- Blodt, M., Bonacci, D., Regnier, J., Chabert, M., and Faucher, J., (2008), "On-line monitoring of mechanical faults in variable-speed induction motor drives using the Wigner distribution", *IEEE Transactions on Industrial Electronics*, Vol.55, No.2, pp.522–533, 2008
- Bonnett, A. H. and Soukup, G. C., (1992), "Cause and analysis of stator and rotor failures in three-phase squirrel-cage induction motors", *IEEE Transactions on Industry applications*, Vol.28, No.4, pp.921–937, 1992
- Bouchikhi, E. H. E., Choqueuse, V., and Benbouzid, M. E. H., (2013), "Current frequency spectral subtraction and its contribution to induction machines' bearings condition monitoring", *IEEE Transactions on Energy Conversion*, Vol.28, No.1, pp.135–144, March 2013
- Boudinar, A. H., Benoussa, N., Bendiabdellah, A., and Khodja, M.-E.-A., (2016), "Induction motor bearing fault analysis using a Root-MUSIC method", *IEEE Transactions on Industry Applications*, Vol.52, No.5, pp.3851–3860, September 2016
- Bouzid, M., Champenois, G., Bellaaj, N., Signac, L., and Jelassi, K., (2008), "An effective neural

- approach for the automatic location of stator interturn faults in induction motor", *IEEE Transactions on Industrial Electronics*, Vol.55, No.12, pp.4277–4289, 2008
- Bouzida, A., Touhami, O., Ibtiouen, R., Belouchrani, A., Fadel, M., and Rezzoug, A., (2011), "Fault diagnosis in industrial induction machines through discrete wavelet transform", *IEEE Transactions on Industrial Electronics*, Vol.58, No.9, pp.4385–4395, 2011
- Briz, F., Degner, M., Zamarron, A., and Guerrero, J., (2003), "Online stator winding fault diagnosis in inverter-fed ac machines using high-frequency signal injection", *IEEE Transactions on Industry Applications*, Vol.39, No.4, pp.1109–1117, July 2003
- Briz, F., Degner, M. W., Guerrero, J. M., and Garcia, P., (2009), "Stator windings fault diagnostics of induction machines operated from inverters and soft-starters using high-frequency negative-sequence currents", *IEEE transactions on industry applications*, Vol.45, No.5, pp.1637–1646, 2009
- Calis, H. and Cakir, A., (2007), "Rotor bar fault diagnosis in three phase induction motors by monitoring fluctuations of motor current zero crossing instants", *Electric Power Systems Research*, Vol.77, No.5-6, pp.385–392, 2007
- Calis, H. and Cakir, A., (2008), "Experimental study for sensorless broken bar detection in induction motors", *Energy Conversion and Management*, Vol.49, No.4, pp.854–862, 2008
- Cardoso, A. M., Cruz, S. M. A., and Fonseca, D. S. B., (1999), "Inter-turn stator winding fault diagnosis in three-phase induction motors, by Park's vector approach", *IEEE Transactions on Energy Conversion*, Vol.14, No.3, pp.595–598, 1999
- Chandrashekhar, G. and Sahin, F., (2014), "A survey on feature selection methods", *Computers & Electrical Engineering*, Vol.40, No.1, pp.16–28, January 2014
- Chaudhury, S. B. and Gupta, S., (2006), "Online identification of AC motor misalignment using current signature analysis and modified K-Mean clustering technique", In *IEEE International Conference on Industrial Technology*, pp. 2331–2336, IEEE
- Chen, S. and Živanović, R., (2010), "Estimation of frequency components in stator current for the detection of broken rotor bars in induction machines", *Measurement*, Vol.43, No.7, pp.887–900, 2010
- Chen, S. and Zivanovic, R., (2007), "A novel high-resolution technique for induction machine broken bar detection", In *Australasian Universities Power Engineering Conference*, pp. 1–5
- Cheng, S., Zhang, P., and Habetler, T. G., (2010), "An impedance identification approach to sensitive detection and location of stator turn-to-turn faults in a closed-loop multiple-motor drive", *IEEE Transactions on Industrial Electronics*, Vol.58, No.5, pp.1545–1554, 2010
- Chow, T. W. and Hai, S., (2004), "Induction machine fault diagnostic analysis with wavelet technique", *IEEE Transactions on Industrial Electronics*, Vol.51, No.3, pp.558–565, 2004
- Clemente-Alarcon, V., Antonino-Daviu, J. A., Riera-Guasp, M., and Vlcek, M., (2014), "Induction motor diagnosis by advanced notch fir filters and the Wigner-Ville distribution", *IEEE Transactions on Industrial Electronics*, Vol.61, No.8, pp.4217–4227, August 2014
- Cruz, S., Toliyat, H., and Cardoso, A., (2005), "DSP implementation of the multiple reference frames theory for the diagnosis of stator faults in a DTC induction motor drive", *IEEE Transactions on Energy Conversion*, Vol.20, No.2, pp.329–335, June 2005
- Cruz, S. M. and Cardoso, A. M., (2001), "Stator winding fault diagnosis in three-phase synchronous and asynchronous motors, by the extended Park's vector approach", *IEEE Transactions on industry applications*, Vol.37, No.5, pp.1227–1233, 2001
- Cruz, S. M. and Cardoso, A. M., (2004), "Diagnosis of stator inter-turn short circuits in DTC induction motor drives", *IEEE Transactions on Industry Applications*, Vol.40, No.5, pp.1349–1360, 2004
- Cupertino, F., deVanna, E., Salvatore, L., and Stasi, S., (2004), "Analysis techniques for detection of IM broken rotor bars after supply disconnection", *IEEE Transactions on Industry Applications*, Vol.40, No.2, pp.526–533, March 2004
- Cusido, J., Romeral, L., Ortega, J. A., Rosero, J. A., and Garcia Espinosa, A., (2008), "Fault

- detection in induction machines using power spectral density in wavelet decomposition", *IEEE Transactions on Industrial Electronics*, Vol.55, No.2, pp.633–643, 2008
- da Costa, C., Kashiwagi, M., and Mathias, M. H., (2015), "Rotor failure detection of induction motors by wavelet transform and Fourier transform in non-stationary condition", *Case Studies in Mechanical Systems and Signal Processing*, Vol.1,, pp.15–26, 2015
- da Silva, A., Povinelli, R., and Demerdash, N., (2008), "Induction machine broken bar and stator short-circuit fault diagnostics based on three-phase stator current envelopes", *IEEE Transactions on Industrial Electronics*, Vol.55, No.3, pp.1310–1318, 2008
- Dalvand, F., Kalantar, A., and Safizadeh, M. S., (2016), "A novel bearing condition monitoring method in induction motors based on instantaneous frequency of motor voltage", *IEEE Transactions on Industrial Electronics*, Vol.63, No.1, pp.364–376, January 2016
- D'Angelo, M. F., Palhares, R. M., Takahashi, R. H., Loschi, R. H., Baccarini, L. M., and Caminhas, W. M., (2011), "Incipient fault detection in induction machine stator-winding using a fuzzy-Bayesian change point detection approach", *Applied Soft Computing*, Vol.11, No.1, pp.179–192, 2011
- Das, S., Purkait, P., Dey, D., and Chakravorti, S., (2011), "Monitoring of inter-turn insulation failure in induction motor using advanced signal and data processing tools", *IEEE Transactions on Dielectrics and Electrical Insulation*, Vol.18, No.5, pp.1599–1608, 2011
- Das, S., Purkait, P., Koley, C., and Chakravorti, S., (2014), "Performance of a load-immune classifier for robust identification of minor faults in induction motor stator winding", *IEEE Transactions on Dielectrics and Electrical Insulation*, Vol.21, No.1, pp.33–44, 2014
- De Angelo, C. H., Bossio, G. R., Giaccone, S. J., Valla, M. I., Solsona, J. A., and Garcia, G. O., (2009), "Online model-based stator-fault detection and identification in induction motors", *IEEE Transactions on Industrial Electronics*, Vol.56, No.11, pp.4671–4680, 2009
- de Jesus Rangel-Magdaleno, J., de Jesus Romero-Troncoso, R., Osornio-Rios, R. A., Cabal-Yepez, E., and Contreras-Medina, L. M., (2009), "Novel methodology for online half-broken-bar detection on induction motors", *IEEE Transactions on Instrumentation and Measurement*, Vol.58, No.5, pp.1690–1698, 2009
- de Jesus Romero-Troncoso, R., (2017), "Multirate signal processing to improve FFT-based analysis for detecting faults in induction motors", *IEEE Transactions on Industrial Informatics*, Vol.13, No.3, pp.1291–1300, 2017
- Deekshit Kompella, K., Venu Gopala Rao, M., and Srinivasa Rao, R., (2017), "Bearing fault detection in a 3 phase induction motor using stator current frequency spectral subtraction with various wavelet decomposition techniques", *Ain Shams Engineering Journal*,, 2017
- Devi, N. R., Gafoor, S. A., and Rao, P. R., (2010), "Wavelet ANN based stator internal faults protection scheme for 3-phase induction motor", In *2010 5th IEEE Conference on Industrial Electronics and Applications*, pp. 1457–1461, IEEE
- Devi, N. R., Sarma, D. S., and Rao, P. R., (2016), "Diagnosis and classification of stator winding insulation faults on a three-phase induction motor using wavelet and MNN", *IEEE Transactions on Dielectrics and Electrical Insulation*, Vol.23, No.5, pp.2543–2555, 2016
- Diallo, D., Benbouzid, M., Hamad, D., and Pierre, X., (2005), "Fault detection and diagnosis in an induction machine drive: a pattern recognition approach based on Concordia stator mean current vector", *IEEE Transactions on Energy Conversion*, Vol.20, No.3, pp.512–519, 2005
- Dias, C. G. and Pereira, F. H., (2018), "Broken rotor bars detection in induction motors running at very low slip using a Hall effect sensor", *IEEE Sensors Journal*, Vol.18, No.11, pp.4602–4613, 2018
- Didier, G., Ternisien, E., Caspary, O., and Razik, H., (2007), "A new approach to detect broken rotor bars in induction machines by current spectrum analysis", *Mechanical Systems and Signal Processing*, Vol.21, No.2, pp.1127–1142, 2007
- Dongyang, D. and Shishuai, Z., (2016), "Comparison of four direct classification methods for intelligent fault diagnosis of rotating machinery", *Applied Soft Computing*, Vol.46,, pp.459–468, 2016

- Dorrell, D. G. and Makhoba, K., (2017), "Detection of inter-turn stator faults in induction motors using short-term averaging of forward and backward rotating stator current phasors for fast prognostics", *IEEE Transactions on Magnetics*, Vol.53, No.11, pp.1-7, 2017
- Duan, F. and Živanovic, R., (2015), "Condition monitoring of an induction motor stator windings via global optimization based on the hyperbolic cross points", *IEEE Transactions on Industrial Electronics*, Vol.62, No.3, pp.1826–1834, 2015
- Ebrahimi, B. M., Faiz, J., Lotfi-fard, S., and Pillay, P., (2012), "Novel indices for broken rotor bars fault diagnosis in induction motors using wavelet transform", *Mechanical Systems and Signal Processing*, Vol.30,, pp.131–145, 2012
- Eftekhari, M., Moallem, M., Sadri, S., and Hsieh, M.-F., (2013), "Online detection of induction motor's stator winding short-circuit faults", *IEEE Systems Journal*, Vol.8, No.4, pp.1272–1282, 2013
- El Bouchikhi, E. H., Choqueuse, V., and Benbouzid, M., (2015), "Induction machine faults detection using stator current parametric spectral estimation", *Mechanical Systems and Signal Processing*, Vol.52,, pp.447–464, 2015
- Elbouchikhi, E., Choqueuse, V., Amirat, Y., Benbouzid, M. E. H., and Turri, S., (2017), "An efficient Hilbert-Huang transform-based bearing faults detection in induction machines", *IEEE Transactions on Energy Conversion*, Vol.32, No.2, pp.401–413, 2017
- Elbouchikhi, E., Choqueuse, V., and Benbouzid, M., (2016), "Induction machine bearing faults detection based on a multi-dimensional MUSIC algorithm and maximum likelihood estimation", *ISA Transactions*, Vol.63,, pp.413–424, July 2016
- Eltabach, M., Antoni, J., and Najjar, M., (2007), "Quantitative analysis of noninvasive diagnostic procedures for induction motor drives", *Mechanical Systems and Signal Processing*, Vol.21, No.7, pp.2838–2856, 2007
- Eltabach, M., Antoni, J., Shanina, G., Sieg-Zieba, S., and Carniel, X., (2009), "Broken rotor bars detection by a new non-invasive diagnostic procedure", *Mechanical Systems and Signal Processing*, Vol.23, No.4, pp.1398–1412, 2009
- Eren, L. and Devaney, M., (2004), "Bearing damage detection via wavelet packet decomposition of the stator current", *IEEE Transactions on Instrumentation and Measurement*, Vol.53, No.2, pp.431–436, April 2004
- Ertunc, H. M., Ocak, H., and Aliustaoglu, C., (2013), "ANN- and ANFIS-based multi-staged decision algorithm for the detection and diagnosis of bearing faults", *Neural Computing and Applications*, Vol.22, No.S1, pp.435–446, May 2013
- Esfahani, E. T., Wang, S., and Sundararajan, V., (2014), "Multisensor wireless system for eccentricity and bearing fault detection in induction motors", *IEEE/ASME Transactions on Mechatronics*, Vol.19, No.3, pp.818–826, June 2014
- Feng, Z., Liang, M., and Chu, F., (2013), "Recent advances in time-frequency analysis methods for machinery fault diagnosis: A review with application examples", *Mechanical Systems and Signal Processing*, Vol.38, No.1, pp.165–205, 2013
- Filippetti, F., Bellini, A., and Capolino, G.-A., (2013), "Condition monitoring and diagnosis of rotor faults in induction machines: State of art and future perspectives", In *Electrical Machines Design Control and Diagnosis (WEMDCD), 2013 IEEE Workshop on*, pp. 196–209, IEEE
- Filippetti, F., Franceschini, G., Tassoni, C., and Vas, P., (1998), "AI techniques in induction machines diagnosis including the speed ripple effect", *IEEE Transactions on Industry Applications*, Vol.34, No.1, pp.98–108, 1998
- Frosini, L. and Bassi, E., (2010), "Stator current and motor efficiency as indicators for different types of bearing faults in induction motors", *IEEE Transactions on Industry Applications*, Vol.57, No.1, pp.244–251, 2010
- Gandhi, A., Corrigan, T., and Parsa, L., (2010), "Recent advances in modeling and online detection of stator interturn faults in electrical motors", *IEEE Transactions on Industrial Electronics*, Vol.58, No.5, pp.1564–1575, 2010

- García-Escudero, L. A., Duque-Perez, O., Morinigo-Sotelo, D., and Perez-Alonso, M., (2011), "Robust condition monitoring for early detection of broken rotor bars in induction motors", *Expert Systems with Applications*, Vol.38, No.3, pp.2653–2660, 2011
- Garcia-Bracamonte, J. E., Ramirez-Cortes, J. M., de Jesus Rangel-Magdaleno, J., Gomez-Gil, P., Peregrina-Barreto, H., and Alarcon-Aquino, V., (2019), "An approach on MCSA-based fault detection using independent component analysis and neural networks", *IEEE Transactions on Instrumentation and Measurement*, 2019
- Garcia-Perez, A., Romero-Troncoso, R. d. J., Cabal-Yepez, E., and Osornio-Rios, R. A., (2011), "The application of high-resolution spectral analysis for identifying multiple combined faults in induction motors", *IEEE Transactions on Industrial Electronics*, Vol.58, No.5, pp.2002–2010, 2011
- Georgoulas, G., Mustafa, M. O., Tsoumas, I. P., Antonino-Daviu, J. A., Climente-Alarcon, V., Stylios, C. D., and Nikolakopoulos, G., (2013), "Principal Component Analysis of the start-up transient and Hidden Markov Modeling for broken rotor bar fault diagnosis in asynchronous machines", *Expert Systems with Applications*, Vol.40, No.17, pp.7024–7033, 2013
- Germen, E., Başaran, M., and Fidan, M., (2014), "Sound based induction motor fault diagnosis using Kohonen self-organizing map", *Mechanical Systems and Signal Processing*, Vol.46, No.1, pp.45–58, 2014
- Ghanbari, T., (2016), "Autocorrelation function-based technique for stator turn-fault detection of induction motor", *IET Science, Measurement & Technology*, Vol.10, No.2, pp.100–110, March 2016
- Ghate, V. N. and Dudul, S. V., (2010a), "Cascade neural-network-based fault classifier for three-phase induction motor", *IEEE Transactions on Industrial Electronics*, Vol.58, No.5, pp.1555–1563, 2010
- Ghate, V. N. and Dudul, S. V., (2010b), "Optimal MLP neural network classifier for fault detection of three phase induction motor", *Expert Systems with Applications*, Vol.37, No.4, pp.3468–3481, April 2010
- Godoy, W. F., da Silva, I. N., Goedtel, A., and Palacios, R. H. C., (2015), "Evaluation of stator winding faults severity in inverter fed induction motors", *Applied Soft Computing*, Vol.35,, pp.420–431, 2015
- Group, M. R. W., Sub Committee, P. S. E., Power System Department, I. a. C., and Society, I. I. A., (1987), "Report of large motor reliability survey of industrial and commercial installations: part 1", *IEEE Transactions on Industry Applications*, Vol.IA 23, No.1, pp.153–158, 1987
- Grubic, S., Aller, J. M., Lu, B., and Habetler, T. G., (2008), "A survey on testing and monitoring methods for stator insulation systems of low-voltage induction machines focusing on turn insulation problems", *IEEE Transactions on Industrial Electronics*, Vol.55, No.12, pp.4127–4136, 2008
- Guyon, I. and Elisseeff, A., (2003), "An introduction to variable and feature selection", *Journal of machine learning research*, Vol.3, No.Mar, pp.1157–1182, 2003
- Gyftakis, K. N., Antonino-Daviu, J. A., Garcia-Hernandez, R., McCulloch, M. D., Howey, D. A., and Cardoso, A. J. M., (2015), "Comparative experimental investigation of broken bar fault detectability in induction motors", *IEEE Transactions on Industry Applications*, Vol.52, No.2, pp.1452–1459, 2015
- Gyftakis, K. N., Cardoso, A. J. M., and Antonino-Daviu, J. A., (2017), "Introducing the Filtered Park's and Filtered Extended Park's Vector Approach to detect broken rotor bars in induction motors independently from the rotor slots number", *Mechanical Systems and Signal Processing*, Vol.93,, pp.30–50, 2017
- Haroun, S., Seghir, A. N., and Touati, S., (2018), "Multiple features extraction and selection for detection and classification of stator winding faults", *IET Electric Power Applications*, Vol.12, No.3, pp.339–346, 2018
- Hassan, O. E., Amer, M., Abdelsalam, A. K., and Williams, B. W., (2018), "Induction motor broken rotor bar fault detection techniques based on fault signature analysis – a review", *IET Electric*

- Power Applications*, Vol.12, No.7, pp.895–907, 2018
- He, X., Cai, D., and Niyogi, P., (2006), "Laplacian score for feature selection", In *Advances in neural information processing systems*, pp. 507–514
- Henao, H., Demian, C., and Capolino, G.-A., (2003), "A frequency-domain detection of stator winding faults in induction machines using an external flux sensor", *IEEE Transactions on Industry Applications*, Vol.39, No.5, pp.1272–1279, 2003
- Jimenez, G. A., Munoz, A. O., and Duarte-Mermoud, M. A., (2007), "Fault detection in induction motors using Hilbert and Wavelet transforms", *Electrical Engineering*, Vol.89, No.3, pp.205–220, 2007
- Joksimovic, G. M. and Penman, J., (2000), "The detection of inter-turn short circuits in the stator windings of operating motors", *IEEE Transactions on Industrial electronics*, Vol.47, No.5, pp.1078–1084, 2000
- Jover Rodriguez, P. V. and Arkkio, A., (2008), "Detection of stator winding fault in induction motor using fuzzy logic", *Applied Soft Computing*, Vol.8, No.2, pp.1112–1120, 2008
- Jung, J.-H., Lee, J.-J., and Kwon, B.-H., (2006), "Online diagnosis of induction motors using MCSA", *IEEE Transactions on Industrial Electronics*, Vol.53, No.6, pp.1842–1852, 2006
- Kapoor, S. R., Khandelwal, N., and Pareek, P., (2014), "Bearing fault analysis by signal energy calculation based signal processing technique in Squirrel Cage Induction Motor", In *Signal Propagation and Computer Technology (ICSPCT), 2014 International Conference on*, pp. 33–38, IEEE
- Keskes, H. and Braham, A., (2015), "Recursive undecimated wavelet packet transform and DAG SVM for induction motor diagnosis", *IEEE Transactions on Industrial Informatics*, Vol.11, No.5, pp.1059–1066, 2015
- Kia, S., Henao, H., and Capolino, G.-A., (2007), "A high-resolution frequency estimation method for three-phase induction machine fault detection", *IEEE Transactions on Industrial Electronics*, Vol.54, No.4, pp.2305–2314, 2007
- Kia, S., Henao, H., and Capolino, G.-A., (2009), "Diagnosis of broken-bar fault in induction machines using discrete wavelet transform without slip estimation", *IEEE Transactions on Industry Applications*, Vol.45, No.4, pp.1395–1404, 2009
- Kim, Y.-H., Youn, Y.-W., Hwang, D.-H., Sun, J.-H., and Kang, D.-S., (2012), "High-resolution parameter estimation method to identify broken rotor bar faults in induction motors", *IEEE Transactions on Industrial Electronics*, Vol.60, No.9, pp.4103–4117, 2012
- Kliman, G. B., Koegl, R. A., Stein, J., Endicott, R. D., and Madden, M. W., (1988), "Noninvasive detection of broken rotor bars in operating induction motors", *IEEE Transactions on Energy Conversion*, Vol.3, No.4, pp.873–879, 1988
- Kliman, G. B., Premerlani, W. J., Koegl, R. A., and Hoeweler, D., (1996), "A new approach to on-line turn fault detection in AC motors", In *Conference Record of the 1996 IEEE Industry Applications Conference Thirty-First IAS Annual Meeting*, volume 1, pp. 687–693, IEEE
- Kohler, J., Sottile, J., and Trutt, F., (2002), "Condition monitoring of stator windings in induction motors Part-1- Experimental investigation of the effective negative-sequence impedance detector", *IEEE Transactions on Industry Applications*, Vol.38, No.5, pp.1447–1453, September 2002
- Kolla, S. R. and Altman, S. D., (2007), "Artificial neural network based fault identification scheme implementation for a three-phase induction motor", *ISA transactions*, Vol.46, No.2, pp.261–266, 2007
- Kowalski, C. T. and Orlowska-Kowalska, T., (2003), "Neural networks application for induction motor faults diagnosis", *Mathematics and Computers in Simulation*, Vol.63, No.3-5, pp.435–448, November 2003
- Kumar, T. C. A., Singh, G., and Naikan, V. N. A., (2015), "Effectiveness of vibration monitoring in the health assessment of induction motor", *International Journal of Prognostics and Health Management*, Vol.6, No.Special Issue Uncertainty in PHM,007, pp.1–9, 2015
- Lamim Filho, P. C. M., Baccarini, L. M. R., Batista, F. B., and Alves, D. A., (2018), "Broken

- rotor bar detection using empirical demodulation and wavelet transform: suitable for industrial application", *Electrical Engineering*, Vol.100, No.4, pp.2253–2260, 2018
- Lau, E. C. C. and Ngan, H. W., (2010), "Detection of motor bearing outer raceway defect by wavelet packet transformed motor current signature analysis", *IEEE Transactions on Instrumentation and Measurement*, Vol.59, No.10, pp.2683–2690, October 2010
- Lee, S. B., Tallam, R. M., and Habetler, T. G., (2003), "A robust, on-line turn-fault detection technique for induction machines based on monitoring the sequence component impedance matrix", *IEEE Transactions on Power Electronics*, Vol.18, No.3, pp.865–872, 2003
- Lee, S.-h., Wang, Y.-q., and Song, J.-i., (2010), "Fourier and wavelet transformations application to fault detection of induction motor with stator current", *Journal of Central South University of Technology*, Vol.17, No.1, pp.93–101, 2010
- Lei, Y., Lin, J., He, Z., and Ming, J. Z., (2013), "A review on empirical mode decomposition in fault diagnosis of rotating machinery", *Mechanical Systems and Signal Processing*, Vol.35,, pp.108–126, 2013
- Leite, V. C. M. N., Borges da Silva, J. G., Veloso, G. F. C., Borges da Silva, L. E., Lambert-Torres, G., Bonaldi, E. L., and de Oliveira, L. E. d. L., (2015), "Detection of localized bearing faults in induction machines by spectral kurtosis and envelope analysis of stator current", *IEEE Transactions on Industrial Electronics*, Vol.62, No.3, pp.1855–1865, March 2015
- Li, B., Chow, M.-Y., Tipsuwan, Y., and Hung, J. C., (2000), "Neural-network-based motor rolling bearing fault diagnosis", *IEEE transactions on industrial electronics*, Vol.47, No.5, pp.1060–1069, 2000
- Li, D. Z., Wang, W., and Ismail, F., (2015), "A spectrum synch technique for induction motor health condition monitoring", *IEEE Transactions on Energy Conversion*, Vol.30, No.4, pp.1348–1355, 2015
- Liboni, L. H. B., Flauzino, R. A., da Silva, I. N., and Marques Costa, E. C., (2019), "Efficient feature extraction technique for diagnosing broken bars in three-phase induction machines", *Measurement (Elsevier)*, Vol.134,, pp.825–834, 2019
- Lindh, T., Ahola, J., Kamarainen, J.-K., Kyrki, V., and Partanen, J., (2003), "Bearing damage detection based on statistical discrimination of stator current", In *Diagnostics for Electric Machines, Power Electronics and Drives (SDEMPED), 4th IEEE International Symposium on*, pp. 177–181, IEEE
- Liu, R., Yang, B., Zio, E., and Chen, X., (2018), "Artificial intelligence for fault diagnosis of rotating machinery: A review", *Mechanical Systems and Signal Processing*, Vol.108,, pp.33–47, August 2018
- Liu, Y. and Bazzi, A. M., (2017), "A review and comparison of fault detection and diagnosis methods for squirrel-cage induction motors: State of the art", *ISA Transactions*, Vol.70,, pp.400–409, 2017
- Lizarraga-Morales, R. A., Rodriguez-Donate, C., Cabal-Yepez, E., Lopez-Ramirez, M., Ledesma-Carrillo, L. M., and Ferrucho-Alvarez, E. R., (2017), "Novel FPGA-based methodology for early broken rotor bar detection and classification through homogeneity estimation", *IEEE Transactions on Instrumentation and Measurement*, Vol.66, No.7, pp.1760–1769, 2017
- Lopez-Ramirez, M., Romero-Troncoso, R. J., Morinigo-Sotelo, D., Duque-Perez, O., Ledesma-Carrillo, L. M., Camarena-Martinez, D., and Garcia-Perez, A., (2016), "Detection and diagnosis of lubrication and faults in bearing on induction motors through STFT", In *Electronics, Communications and Computers (CONIELECOMP), 2016 International Conference on*, pp. 13–18, IEEE
- Mahela, O. P. and Shaik, A. G., (2017a), "Power quality recognition in distribution system with solar energy penetration using S-transform and Fuzzy C-means clustering", *Renewable Energy*, Vol.106,, pp.37–51, 2017
- Mahela, O. P. and Shaik, A. G., (2017b), "Recognition of power quality disturbances using S -transform based ruled decision tree and fuzzy C-means clustering classifiers", *Applied Soft Computing*, Vol.59,, pp.243–257, 2017
- Martins, J., Pires, V., and Pires, A., (2007), "Unsupervised neural-network-based algorithm for an on-line diagnosis of three-phase induction motor stator fault", *IEEE Transactions on Industrial*

Electronics, Vol.54, No.1, pp.259–264, February 2007

- Matic, D., Kulić, F., Pineda-Sánchez, M., and Kamenko, I., (2012), "Support vector machine classifier for diagnosis in electrical machines: Application to broken bar", *Expert Systems with Applications*, Vol.39, No.10, pp.8681–8689, 2012
- Mbo'o, C. P. and Hameyer, K., (2016), "Fault diagnosis of bearing damage by means of the linear discriminant analysis of stator current features from the frequency selection", *IEEE Transactions on Industry Applications*, Vol.52, No.5, pp.3861–3868, 2016
- Mehrjou, M. R., Mariun, N., Hamiruce Marhaban, M., and Misron, N., (2011), "Rotor fault condition monitoring techniques for squirrel-cage induction machine – A review", *Mechanical Systems and Signal Processing*, Vol.25, No.8, pp.2827–2848, November 2011
- Mishra, S., Bhende, C. N., and Panigrahi, B. K., (2008), "Detection and classification of power quality disturbances using s-transform and probabilistic neural network", *IEEE Transactions on Power Delivery*, Vol.23, No.1, pp.280–287, 2008
- Moravej, Z., Abdoos, A., and Sanaye-Pasand, M., (2010), "A new approach based on s-transform for discrimination and classification of inrush current from internal fault currents using probabilistic neural network", *Electric Power Components and Systems*, Vol.38, No.10, pp.1194–1210, 2010
- Morinigo-Sotelo, D., Romero-Troncoso, R. d. J., Panagiotou, P. A., Antonino-Daviu, J. A., and Gyftakis, K. N., (2017), "Reliable detection of rotor bars breakage in induction motors via MUSIC and ZSC", *IEEE Transactions on Industry Applications*, Vol.54, No.2, pp.1224–1234, 2017
- Naha, A., Samanta, A. K., Routray, A., and Deb, A. K., (2016), "A method for detecting half-broken rotor bar in lightly loaded induction motors using current", *IEEE Transactions on Instrumentation and Measurement*, Vol.65, No.7, pp.1614–1625, 2016
- Nakamura, H., Chihara, M., Inoki, T., Higaki, T., Okuda, K., and Mizuno, Y., (2010), "Impulse testing for detection of insulation failure of motor winding and diagnosis based on hidden Markov model", *IEEE Transactions on Dielectrics and Electrical Insulation*, Vol.17, No.5, pp.1619–1627, 2010
- Nandi, S., (2006), "Detection of Stator Faults in Induction Machines Using Residual Saturation Harmonics", *IEEE Transactions on Industry Applications*, Vol.42, No.5, pp.1201–1208, 2006
- Nejjari, H. and Benbouzid, M. E. H., (2000), "Monitoring and diagnosis of induction motors electrical faults using a current Park's vector pattern learning approach", *IEEE Transactions on industry applications*, Vol.36, No.3, pp.730–735, 2000
- Önel, I. Y. and Benbouzid, M. E. H., (2008), "Induction motor bearing failure detection and diagnosis: Park and concordia transform approaches comparative study", *IEEE/ASME Transactions on mechatronics*, Vol.13, No.2, pp.257–262, 2008
- Nguyen, V., Wang, D., Seshadrinath, J., Ukil, A., Krishna, M. S., Nadarajan, S., and Vaiyapuri, V., (2017), "A method for incipient interturn fault detection and severity estimation of induction motors under inherent asymmetry and voltage imbalance", *IEEE Transactions on Transportation Electrification*, Vol.3, No.3, pp.703–715, 2017
- Nussbaumer, P., Vogelsberger, M. A., and Wolbank, T. M., (2014), "Induction machine insulation health state monitoring based on online switching transient exploitation", *IEEE Transactions on Industrial Electronics*, Vol.62, No.3, pp.1835–1845, 2014
- Onel, I. Y., Burak Dalci, K., and Senol, I., (2005), "Detection of outer raceway bearing defects in small induction motors using stator current analysis", *Sadhana*, Vol.30, No.6, pp.713–722, 2005
- Ordaz-Moreno, A., de Jesus Romero-Troncoso, R., Vite-Frias, J., Rivera-Gillen, J., and Garcia-Perez, A., (2008), "Automatic online diagnosis algorithm for broken-bar detection on induction motors based on discrete wavelet transform for FPGA implementation", *IEEE Transactions on Industrial Electronics*, Vol.55, No.5, pp.2193–2202, 2008
- Palácios, R. H. C., da Silva, I. N., Goedtel, A., and Godoy, W. F., (2016), "A novel multi-agent approach to identify faults in line connected three-phase induction motors", *Applied Soft Computing*, Vol.45,, pp.1–10, August 2016

- Pandarakone, S. E., Mizuno, Y., and Nakamura, H., (2017), "Distinct fault analysis of induction motor bearing using frequency spectrum determination and support vector machine", *IEEE Transactions on Industry Applications*, Vol.53, No.3, pp.3049–3056, 2017
- Pandarakone, S. E., Mizuno, Y., and Nakamura, H., (2018), "Evaluating the progression and orientation of scratches on outer-raceway bearing using a pattern recognition method", *IEEE Transactions on Industrial Electronics*, Vol.66, No.2, pp.1307–1314, 2018
- Pandarakone, S. E., Mizuno, Y., and Nakamura, H., (2019), "A comparative study between machine learning algorithm and artificial intelligence neural network in detecting minor bearing fault of induction motors", *Energies*, Vol.12, No.11, pp.1–14, 2019
- Peng, Z. and Chu, F., (2004), "Application of the wavelet transform in machine condition monitoring and fault diagnostics: a review with bibliography", *Mechanical Systems and Signal Processing*, Vol.18, No.2, pp.199–221, March 2004
- Penman, J., Sedding, H. G., Lloyd, B. A., and Fink, W. T., (1994), "Detection and location of interturn short circuits in the stator windings of operating motors", *IEEE Transactions on Energy Conversion*, Vol.9, No.4, pp.652–658, 1994
- Pires, V., Kadivonga, M., Martins, J., and Pires, A., (2013), "Motor square current signature analysis for induction motor rotor diagnosis", *Measurement (Elsevier)*, Vol.46, pp.942–948, 2013
- Ponci, F., Monti, A., Cristaldi, L., and Lazzaroni, M., (2007), "Diagnostic of a Faulty Induction Motor Drive via Wavelet Decomposition", *IEEE Transactions on Instrumentation and Measurement*, Vol.56, No.6, pp.2606–2615, 2007
- Pons-Llinares, J., Antonino-Daviu, J., Riera-Guasp, M., Pineda-Sanchez, M., and Climente-Alarcon, V., (2011), "Induction Motor Diagnosis Based on a Transient Current Analytic Wavelet Transform via Frequency B-Splines", *IEEE Transactions on Industrial Electronics*, Vol.58, No.5, pp.1530–1544, 2011
- Prieto, M. D., Cirrincione, G., Espinosa, A. G., Ortega, J. A., and Henao, H., (2012), "Bearing fault detection by a novel condition-monitoring scheme based on statistical-time features and neural networks", *IEEE Transactions on Industrial Electronics*, Vol.60, No.8, pp.3398–3407, 2012
- Puche-Panadero, R., Pineda-Sanchez, M., Riera-Guasp, M., Roger-Folch, J., Hurtado-Perez, E., and Perez-Cruz, J., (2009), "Improved resolution of the MCSA method via Hilbert transform, enabling the diagnosis of rotor asymmetries at very low slip", *IEEE Transactions on Energy Conversion*, Vol.24, No.1, pp.52–59, 2009
- Rai, A. and Upadhyay, S., (2016), "A review on signal processing techniques utilized in the fault diagnosis of rolling element bearings", *Tribology International*, Vol.96, pp.289–306, 2016
- Rangel-Magdaleno, J., Peregrina-Barreto, H., Ramirez-Cortes, J., and Cruz-Vega, I., (2017), "Hilbert spectrum analysis of induction motors for the detection of incipient broken rotor bars", *Measurement*, Vol.109, pp.247–255, 2017
- Riera-Guasp, M., Pineda-Sanchez, M., Pérez-Cruz, J., Puche-Panadero, R., Roger-Folch, J., and Antonino-Daviu, J. A., (2012), "Diagnosis of induction motor faults via gabor analysis of the current in transient regime", *IEEE Transactions on Instrumentation and Measurement*, Vol.61, No.6, pp.1583–1596, 2012
- Sadeghian, A., Zhongming Ye, and Bin Wu, (2009), "Online Detection of Broken Rotor Bars in Induction Motors by Wavelet Packet Decomposition and Artificial Neural Networks", *IEEE Transactions on Instrumentation and Measurement*, Vol.58, No.7, pp.2253–2263, 2009
- Saidi, L., Fnaiech, F., Henao, H., Capolino, G. A., and Cirrincione, G., (2013), "Diagnosis of broken-bars fault in induction machines using higher order spectral analysis", *ISA transactions*, Vol.52, No.1, pp.140–148, 2013
- Samanta, A. K., Naha, A., Routray, A., and Deb, A. K., (2018), "Fast and accurate spectral estimation for online detection of partial broken bar in induction motors", *Mechanical Systems and Signal Processing*, Vol.98, pp.63–77, 2018
- Sapena-Bañó, A., Pineda-Sánchez, M., Puche-Panadero, R., Martínez-Roman, J., and Matić, D., (2015), "Fault diagnosis of rotating electrical machines in transient regime using a single

- stator current's FFT", *IEEE Transactions on Instrumentation and Measurement*, Vol.64, No.11, pp.3137–3146, 2015
- Sapena-Bano, A., Pineda-Sanchez, M., Puche-Panadero, R., Martinez-Roman, J., and Kanović, e., (2015), "Low-cost diagnosis of rotor asymmetries in induction machines working at a very low slip using the reduced envelope of the stator current", *IEEE Transactions on Energy Conversion*, Vol.30, No.4, pp.1409–1419, 2015
- Schmitt, H. L., Scalassara, P. R., Goedtel, A., and Endo, W., (2015), "Detecting bearing faults in line-connected induction motors using information theory measures and neural networks", *Journal of Control, Automation and Electrical Systems*, Vol.26, No.5, pp.535–544, 2015
- Schoen, R. R., Habetler, T. G., Kamran, F., and Bartfield, R. G., (1995a), "Motor bearing damage detection using stator current monitoring", *IEEE Transactions on Industry Applications*, Vol.31, No.6, pp.1274–1279, 1995
- Schoen, R. R., Lin, B. K., Habetler, T. G., Schlag, J. H., and Farag, S., (1995b), "An unsupervised, on-line system for induction motor fault detection using stator current monitoring", *Industry Applications, IEEE Transactions on*, 1995
- Seera, M., Lim, C. P., Ishak, D., and Singh, H., (2013), "Offline and online fault detection and diagnosis of induction motors using a hybrid soft computing model", *Applied Soft Computing*, Vol.13, No.12, pp.4493–4507, December 2013
- Seshadrinath, J., Singh, B., and Panigrahi, B. K., (2012), "Single-turn fault detection in induction machine using complex-wavelet-based method", *IEEE Transactions on Industry Applications*, Vol.48, No.6, pp.1846–1854, November 2012
- Seshadrinath, J., Singh, B., and Panigrahi, B. K., (2013), "Vibration analysis based interturn fault diagnosis in induction machines", *IEEE Transactions on Industrial Informatics*, Vol.10, No.1, pp.340–350, 2013
- Seshadrinath, J., Singh, B., and Panigrahi, B. K., (2014a), "Incipient inter-turn fault diagnosis in induction machines using an analytic wavelet-based optimized Bayesian inference", *IEEE Transactions on Neural Networks and Learning Systems*, Vol.25, No.5, pp.990–1001, 2014
- Seshadrinath, J., Singh, B., and Panigrahi, B. K., (2014b), "Incipient turn fault detection and condition monitoring of induction machine using analytical wavelet transform", *IEEE Transactions on Industry Applications*, Vol.50, No.3, pp.2235–2242, 2014
- Sharifi, R. and Ebrahimi, M., (2011), "Detection of stator winding faults in induction motors using three-phase current monitoring", *ISA transactions*, Vol.50, No.1, pp.14–20, 2011
- Shi, P., Chen, Z., Vagapov, Y., and Zouaoui, Z., (2014), "A new diagnosis of broken rotor bar fault extent in three phase squirrel cage induction motor", *Mechanical Systems and Signal Processing*, Vol.42, No.1-2, pp.388–403, January 2014
- Siau, J., Graff, A., Soong, W., and Ertugrul, N., (2004), "Broken bar detection in induction motors using current and spectral flux analysis", *Australian Journal of Electrical and Electronics Engineering*, Vol.1, No.13, pp.171–177, 2004
- Siddique, A., Yadava, G. S., and Singh, B., (2003), "Applications of artificial intelligence techniques for induction machine stator fault diagnostics", In *4th IEEE International Symposium on Diagnostics for Electric Machines, Power Electronics and Drives*, pp. 29–34, IEEE
- Siddique, A., Yadava, G. S., and Singh, B., (2005), "A review of stator fault monitoring techniques of induction motors", *IEEE transactions on energy conversion*, Vol.20, No.1, pp.106–114, 2005
- Siegel, D., Lee, J., and Ly, C., (2011), "Methodology and framework for predicting rolling element helicopter bearing failure", In *IEEE Conference on Prognostics and Health Management*, pp. 1–9, IEEE
- Singh, G. and Ahmed Saleh Al Kazzaz, S., (2003), "Induction machine drive condition monitoring and diagnostic research—a survey", *Electric Power Systems Research*, Vol.64, No.2, pp.145–158, 2003
- Singh, G. and Naikan, V. N. A., (2018), "Detection of half broken rotor bar fault in VFD driven induction motor drive using motor square current MUSIC analysis", *Mechanical Systems and*

Signal Processing, Vol.110,, pp.333–348, 2018

- Singh, G. K. and Kazzaz, A. S. A., (2004), "Vibration signal analysis using wavelet transform for isolation and identification of electrical faults in induction machine", *Electric Power Systems Research*, Vol.68,, pp.119–136, 2004
- Singh, H., Seera, M., and Abdullah, M. Z., (2013), "Detection and diagnosis of broken rotor bars and eccentricity faults in induction motors using the Fuzzy Min-Max neural network", In *International joint conference on neural networks (IJCNN)*, pp. 1–5, IEEE
- Singh, S. and Kumar, N., (2017), "Detection of bearing faults in mechanical systems using stator current monitoring", *IEEE Transactions on Industrial Informatics*, Vol.13, No.3, pp.1341–1349, 2017
- Sticescu, R. B., Viarouge, P., Cros, J., and Kamwa, I., (1999), "A general approach of space and time harmonics interactions in induction motors", In *IEEE International Electric Machines and Drives Conference. IEMDC'99. Proceedings (Cat. No. 99EX272)*, pp. 366–368, IEEE
- Stockwell, R. G., Mansinha, L., and Lowe, R. P., (1996), "Localization of the complex spectrum: the S transform", *IEEE Transactions on Signal Processing*, Vol.44, No.4, pp.998–1001, 1996
- Tallam, R., Habetler, T., and Harley, R., (2003), "Stator winding turn-fault detection for closed-loop induction motor drives", *IEEE Transactions on Industry Applications*, Vol.39, No.3, pp.720–724, May 2003
- Thomson, W. T. and Morrison, D., (2002), "On-line diagnosis of stator shorted turns in mains and inverter fed low voltage induction motors"
- Thorsen, O. V. and Dalva, M., (1995), "A survey of faults on induction motors in offshore oil industry, petrochemical industry, gas terminals, and oil refineries", *IEEE transactions on industry applications*, Vol.31, No.5, pp.1186–1196, 1995
- Trachi, Y., El Bouchikhi, E. H., Choqueuse, V., and Benbouzid, M. E. H., (2016a), "Induction machines fault detection based on subspace spectral estimation", *IEEE Transactions on Industrial Electronics*, Vol.63, No.9, pp.5641–5650, 2016
- Trachi, Y., Elbouchikhi, E., Choqueuse, V., Benbouzid, M. E. H., and Wang, T., (2016b), "A novel induction machine fault detector based on hypothesis testing", *IEEE Transactions on Industry Applications*, Vol.53, No.3, pp.3039–3048, 2016
- Tran, V. T., AlThobiani, F., Ball, A., and Choi, B.-K., (2013), "An application to transient current signal based induction motor fault diagnosis of Fourier-Bessel expansion and simplified fuzzy ARTMAP", *Expert Systems with Applications*, Vol.40, No.13, pp.5372–5384, October 2013
- Trejo-Caballero, G., Rostro-Gonzalez, H., de Jesus Romero-Troncoso, R., Garcia-Capulin, C. H., Ibarra-Manzano, O. G., Avina-Cervantes, J. G., and Garcia-Perez, A., (2017), "Multiple signal classification based on automatic order selection method for broken rotor bar detection in induction motors", *Electrical Engineering*, Vol.99, No.3, pp.987–996, 2017
- Tsoumas, I. P., Georgoulas, G., Mitronikas, E. D., and Safacas, A. N., (2008), "Asynchronous machine rotor fault diagnosis technique using complex wavelets", *IEEE Transactions on Energy Conversion*, Vol.23, No.2, pp.444–459, 2008
- Ukil, A., (2012), "Time-domain estimation of sub-harmonic sinusoidal disturbance in sinusoidal signal with applications in induction motor diagnostics", In *XXth International Conference on Electrical Machines*, pp. 1899–1905, IEEE
- Ukil, A., Chen, S., and Andenna, A., (2011), "Detection of stator short circuit faults in three phase induction motors using motor current zero crossing instants", *Electric Power Systems Research*, Vol.81,, pp.1036–1044, 2011
- Uyar, M., Yildirim, S., and Gencoglu, M. T., (2009), "An expert system based on S-transform and neural network for automatic classification of power quality disturbances", *Expert Systems with Applications*, Vol.36, No.3, pp.5962–5975, April 2009
- Valles-Novo, R., de Jesus Rangel-Magdaleno, J., Ramirez-Cortes, J. M., Peregrina-Barreto, H., and Morales-Caporal, R., (2015), "Empirical mode decomposition analysis for broken-bar detection on squirrel cage induction motors", *IEEE Transactions on Instrumentation and Measurement*, Vol.64, No.5, pp.1118–1128, 2015

- Vapnik, V. N., (1995), *The nature of statistical learning theory*, Springer, Berlin, 1995
- Verma, A., Sarangi, S., and Kolekar, M. H., (2014), "Stator winding fault prediction of induction motors using multiscale entropy and grey fuzzy optimization methods", *Computers & Electrical Engineering*, Vol.40, No.7, pp.2246–2258, 2014
- Wang, Y., Xiang, J., Markert, R., and Liang, M., (2016), "Spectral kurtosis for fault detection, diagnosis and prognostics of rotating machines: A review with applications", *Mechanical Systems and Signal Processing*, Vol.66,, pp.679–698, 2016
- Widodo, A. and Yang, B.-S., (2007), "Support vector machine in machine condition monitoring and fault diagnosis", *Mechanical Systems and Signal Processing*, Vol.21, No.6, pp.2560–2574, 2007
- Widodo, A., Yang, B.-S., Gu, D.-S., and Choi, B.-K., (2009), "Intelligent fault diagnosis system of induction motor based on transient current signal", *Mechatronics*, Vol.19, No.5, pp.680–689, August 2009
- Wu, Q. and Nandi, S., (2008), "Fast single-turn sensitive stator inter-turn fault detection of induction machines based on positive and negative sequence third harmonic components of line currents", In *IEEE Industry Applications Society Annual Meeting*, pp. 1–8, IEEE
- Xu, B., Sun, L., Xu, L., and Xu, G., (2012), "An ESPRIT-SAA-based detection method for broken rotor bar fault in induction motors", *IEEE Transactions on Energy Conversion*, Vol.27, No.3, pp.654–660, 2012
- Yan, R., Gao, R. X., and Chen, X., (2014), "Wavelets for fault diagnosis of rotary machines: A review with applications", *Signal Processing*, Vol.96,, pp.1–15, March 2014
- Yang, T., Pen, H., Wang, Z., and Chang, C. S., (2016), "Feature knowledge based fault detection of induction motors through the analysis of stator current data", *IEEE Transactions on Instrumentation and Measurement*, Vol.65, No.3, pp.549–558, 2016
- Yang, W., Little, C., and Court, R., (2014), "S-Transform and its contribution to wind turbine condition monitoring", *Renewable Energy*, Vol.62,, pp.137–146, February 2014
- Yazici, B. and Kliman, G. B., (1999), "An adaptive statistical time-frequency method for detection of broken bars and bearing faults in motors using stator current", *IEEE Transactions on Industry Applications*, Vol.35, No.2, pp.442–452, 1999
- Ye, Z., Sadeghian, A., and Wu, B., (2006), "Mechanical fault diagnostics for induction motor with variable speed drives using Adaptive Neuro-fuzzy Inference System", *Electric Power Systems Research*, Vol.76, No.9-10, pp.742–752, 2006
- Ye, Z., Wu, B., and Sadeghian, A., (2003), "Current signature analysis of induction motor mechanical faults by wavelet packet decomposition", *IEEE transactions on industrial electronics*, Vol.50, No.6, pp.1217–1228, 2003
- Yun, J., Lee, K., Lee, K.-W., Lee, S. B., and Yoo, J.-Y., (2009), "Detection and classification of stator turn faults and high-resistance electrical connections for induction machines", *IEEE Transactions on industry applications*, Vol.45, No.2, pp.666–675, 2009
- Zarei, J., (2012), "Induction motors bearing fault detection using pattern recognition techniques", *Expert Systems with Applications*, Vol.39, No.1, pp.68–73, January 2012
- Zarei, J. and Poshtan, J., (2007), "Bearing fault detection using wavelet packet transform of induction motor stator current", *Tribology International*, Vol.40, No.5, pp.763–769, 2007
- Zarei, J. and Yousefizadeh, S., (2014), "Fault detection in induction motors using Park's vector approach and wavelet analysis", In *Mechatronics and Control (ICMC), 2014 International Conference on*, pp. 1064–1068, IEEE
- Zhang, J.-w., Zhu, N.-h., Yang, L., Yao, Q., and Lu, Q., (2007), "A fault diagnosis approach for broken rotor bars based on EMD and envelope analysis", *Journal of China University of Mining and Technology*, Vol.17, No.2, pp.205–209, 2007
- Zhang, P., Du, Y., Habetler, T. G., and Lu, B., (2011), "A survey of condition monitoring and protection methods for medium-voltage induction motors", *IEEE Transactions on Industry Applications*, Vol.47, No.1, pp.34–46, January 2011
- Zidani, F., El Hachemi Benbouzid, M., Diallo, D., and Nait-Said, M., (2003), "Induction motor stator

faults diagnosis by a current concordia pattern-based fuzzy decision system", *IEEE Transactions on Energy Conversion*, Vol.18, No.4, pp.469-475, December 2003