

Assoc Professor. Chee-Ming Ting  
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## Biography

Dr Chee-Ming Ting is Associate Professor in the School of Information Technology, Monash University Malaysia, specializing in machine learning and data science. He was a Senior Lecturer with the School of Biomedical Engineering and Health Sciences, University Teknologi Malaysia from 2014 to 2020, and a Research Scientist with the Computer, Electrical and Mathematical Sciences & Engineering Division, King Abdullah University of Science and Technology from 2017 to 2018. He was an Honorary Senior Research Fellow at the Division of Psychology and Language Sciences, University College London from 2020 to 2023.

Dr Ting has published over 26 journal papers, 43 refereed conference papers and 6 book chapters in signal processing, medical imaging, biomedical informatics and biomedical engineering. He has served as principal investigator (PI) and co-PI for research grants from university and government of over RM2.5 millions in total. He has graduated 4 PhD and 5 Masters students, and is now supervising 10 PhD Masters students. His research interests include signal & image processing, deep neural networks, computational statistics and statistical models for networks with applications to neuroimaging and other biomedical data for automatic prediction of diseases and patient monitoring.

Dr Ting received Research Excellence Award from the IEEE Signal Processing Society Malaysia for the Best IEEE Journal Paper in 2019 and 2022, respectively. He also won several national and international innovations awards. He has served as referee for over 30 journals and IEEE flagship conferences, and as member in technical and organizing committees for international conferences.

## Qualifications

Mathematics - Statistics, Doctor of Philosophy

Electrical Engineering, Master of Engineering

Electrical & Electronics Engineering, Bachelor of Engineering (Hons.)

Graduate Member, Board of Engineers Malaysia

Senior Member, IEEE Signal Processing Society

## Employment

### Associate Professor

Malaysia Sch of Information Technology

MONASH UNIVERSITY

1 Sept 2020 → present

### Honorary Senior Research Fellow

University College London

London, United Kingdom

12 Jul 2020 → 12 Jul 2023

### Research Scientist

King Abdullah University of Science and Technology

Thuwal, Saudi Arabia

1 Jul 2017 → 31 Aug 2018

### Senior Lecturer

Universiti Teknologi Malaysia (University of Technology Malaysia)

Johor Bahru, Malaysia

1 Jul 2014 → 31 Aug 2020

## Research outputs

### **ASF-YOLO: A novel YOLO model with attentional scale sequence fusion for cell instance segmentation**

Kang, M., Ting, C-M., Ting, F. F. & Phan, R. C. W., Jul 2024, In: *Image and Vision Computing*. 147, 9 p., 105057.

### **Graph autoencoders for embedding learning in brain networks and major depressive disorder identification**

Noman, F., Ting, C. M., Kang, H., Phan, R. C. W. & Ombao, H., Mar 2024, In: *IEEE Journal of Biomedical and Health Informatics*. 28, 3, p. 1644-1655 12 p.

### **A Deep Probabilistic Spatiotemporal Framework for Dynamic Graph Representation Learning with Application to Brain Disorder Identification**

Yap, S-Y., Loo, J. Y., Ting, C-M., Noman, F., Phan, R. C. W., Razi, A. & Dowe, D. L., 2024, *Proceedings of the 33rd International Joint Conference on Artificial Intelligence, IJCAI 2024*. Larson, K. (ed.). Marina del Rey CA USA: Association for the Advancement of Artificial Intelligence (AAAI), p. 5353-5361 9 p. (IJCAI International Joint Conference on Artificial Intelligence).

### **Brain waves spectral analysis of human responses to odorous and non-odorous substances: A preliminary study.**

Chow, X. H., Ting, C. M., Wan Hamizan, A. K., Zahedi, F. D., Tan, H. J., Remli, R., Khoo, C. S., Ombao, H., Sahibuddin, S. Z. & Husain, S., 1 Jun 2023, In: *The Journal of Laryngology & Otology*. 138, 3, 26 p.

### **A unified framework for static and dynamic functional connectivity augmentation for multi-domain brain disorder classification**

Tan, Y-F., Ting, C. M., Noman, F., Phan, R. C. W. & Ombao, H., 2023, *2023 IEEE International Conference on Image Processing, Proceedings*. Ngo, C-W. & See, J. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 635-639 5 p. (Proceedings - International Conference on Image Processing, ICIP).

### **ELEGANT: End-to-end language grounded speech denoiser for efficient generation of talking face**

Chai, A. F., Rajanala, S., Pal, A., Phan, R. C. W. & Ting, C. M., 2023, *2023 Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC)*. Lin, T-L., Kajikawa, Y. & Yin, Z. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 833-838 6 p.

### **RCS-YOLO: A fast and high-accuracy object detector for brain tumor detection**

Kang, M., Ting, C-M., Ting, F. F. & Phan, R. C. W., 2023, *26th International Conference Vancouver, BC, Canada, October 8-12, 2023 Proceedings, Part IV*. Greenspan, H., Madabhushi, A., Mousavi, P., Salcudean, S., Duncan, J., Syeda-Mahmood, T. & Taylor, R. (eds.). Cham Switzerland: Springer, p. 600-610 11 p. (Lecture Notes in Computer Science; vol. 14223).

### **Markov-switching state-space models with applications to neuroimaging**

Degras, D., Ting, C-M. & Ombao, H., Oct 2022, In: *Computational Statistics and Data Analysis*. 174, 23 p., 107525.

### **Separating stimulus-induced and background components of dynamic functional connectivity in naturalistic fMRI**

Ting, C-M., Skipper, J. I., Noman, F., Small, S. L. & Ombao, H., 1 Jun 2022, In: *IEEE Transactions on Medical Imaging*. 41, 6, p. 1431-1442 12 p.

### **A brief review of computation techniques for ECG signal analysis**

Hussain, S. S., Noman, F., Hussain, H., Ting, C-M., bin Hamid, S. R. G. S., Sh-Hussain, H., Jalil, M. A., Ahmad, A. Z., Rizvi, S. Z. H., Kipli, K., Jacob, K., Ray, K., Shamim Kaiser, M., Mahmud, M. & Ali, J., 28 Feb 2022, *Proceedings of the Third International Conference on Trends in Computational and Cognitive Engineering, TCCE 2021*. Kaiser, M. S., Ray, K., Bandyopadhyay, A., Jacob, K. & Long, K. S. (eds.). Singapore Singapore: Springer, p. 223-234 12 p. (Lecture Notes in Networks and Systems; vol. 348).

### **Classification of ECG ventricular beats assisted by Gaussian parameters' dictionary**

Salleh, S. H., Noman, F., Hussain, H., Ting, C-M., Hamid, S. R. B. G. S., Sh-Hussain, H., Jalil, M. A., Zubaidi, A. L. A., Rizvi, S. Z. H., Kipli, K., Jacob, K., Ray, K., Kaiser, M. S., Mahmud, M. & Ali, J., 28 Feb 2022, *Proceedings of the Third International Conference on Trends in Computational and Cognitive Engineering, TCCE 2021*. Kaiser, M. S., Ray, K., Bandyopadhyay, A., Jacob, K. & Long, K. S. (eds.). Singapore Singapore: Springer, p. 533-548 16 p. (Lecture Notes in Networks and Systems; vol. 348).

**Graph autoencoder-based embedded learning in dynamic brain networks for autism spectrum disorder identification**  
Noman, F., Yap, S. Y., Phan, R. C. W., Ombao, H. & Ting, C. M., 2022, *2022 IEEE International Conference on Image Processing - Proceedings*. Valenzise, G. & Maugey, T. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 2891-2895 5 p. (Proceedings - International Conference on Image Processing, ICIP).

**GraphEx: facial action unit graph for micro-expression classification**

Leong, S-M., Noman, F., Phan, R. C. W., Baskaran, V. M. & Ting, C-M., 2022, *2022 IEEE International Conference on Image Processing - Proceedings*. Valenzise, G. & Maugey, T. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 3296-3300 5 p. (Proceedings - International Conference on Image Processing, ICIP).

**Detecting dynamic community structure in functional brain networks across individuals: A multilayer approach**

Ting, C. M., Samdin, S. B., Tang, M. & Ombao, H., Feb 2021, In: *IEEE Transactions on Medical Imaging*. 40, 2, p. 468-480 13 p.

**Enhanced signal processing using modified cyclic shift tree denoising**

Hussain, H., Wan Abd Aziz, W. S. N. A., Chee-Ming, T., Noman, F. M., Ahmad Zubaidi, A. L., Samdin, S. B., Sh, H., Jalil, M. A., Yusoff, Y., Jacob, K., Ray, K., Kaiser, M. S., Shaikh Salleh, S. H. & Ali, J., 2021, *Applied Intelligence and Informatics - First International Conference, All 2021 Nottingham, UK, July 30-31, 2021 Proceedings*. Mahmud, M., Kaiser, M. S., Kasabov, N., Iftekharruddin, K. & Zhong, N. (eds.). Cham Switzerland: Springer, p. 150-160 11 p. (Communications in Computer and Information Science; vol. 1435).

**Identifying individuals using EEG-based brain connectivity patterns**

Hussain, H., Ting, C-M., Jalil, M. A., Ray, K., Rizvi, S. Z. H., Kavikumar, J., Noman, F. M., Zubaidi, A. L. A., Low, Y. F., Sh-Hussain, Mahmud, M., Kaiser, M. S. & Ali, J., 2021, *Brain Informatics - 14th International Conference, BI 2021 Virtual Event, September 17-19, 2021 Proceedings*. Mahmud, M., Kaiser, M. S., Vassanelli, S., Dai, Q. & Zhong, N. (eds.). Cham Switzerland: Springer, p. 124-135 12 p. (Lecture Notes in Computer Science; vol. 12960).

**Key techniques and challenges for processing of heart sound signals**

Shaikh Salleh, S. H., Noman, F. M., Ting, C-M., Syed Hamid, S. R. B. G., Hussain, S. H. B. S., Jalil, M. A., Ahmad Zubaidi, A. L., Jacob, K., Ray, K., Kaiser, M. S. & Ali, J., 2021, *Applied Intelligence and Informatics - First International Conference, All 2021 Nottingham, UK, July 30-31, 2021 Proceedings*. Mahmud, M., Kaiser, M. S., Kasabov, N., Iftekharruddin, K. & Zhong, N. (eds.). Cham Switzerland: Springer, p. 136-149 14 p. (Communications in Computer and Information Science; vol. 1435).

**Clinical interpretations of the effectiveness of changes in body position during aerobic fitness after neurologic injury**

Izan, N. F., Salleh, S. H., Ting, C. M., Noman, F., Sh-Hussain, H., Poznanski, R. R. & Latif, A. Z. A., 30 Sept 2020, In: *Journal of Integrative Neuroscience*. 19, 3, p. 479-487 9 p.

A multi-domain connectome convolutional neural network for identifying schizophrenia from EEG connectivity patterns  
Phang, C. R., Noman, F., Hussain, H., Ting, C. M. & Ombao, H., May 2020, In: *IEEE Journal of Biomedical and Health Informatics*. 24, 5, p. 1333-1343 11 p.

**A markov-switching model approach to heart sound segmentation and classification**

Noman, F., Salleh, S. H., Ting, C. M., Samdin, S. B., Ombao, H. & Hussain, H., Mar 2020, In: *IEEE Journal of Biomedical and Health Informatics*. 24, 3, p. 705-716 12 p.

**Statistical model for dynamically-changing correlation matrices with application to brain connectivity**

Huang, S-G., Samdin, S. B., Ting, C-M., Ombao, H. & Chung, M. K., 1 Feb 2020, In: *Journal of Neuroscience Methods*. 331, 12 p., 108480.

**Multi-scale factor analysis of high-dimensional functional connectivity in brain networks**

Ting, C. M., Ombao, H., Salleh, S. H. & Latif, A. Z. A., Jan 2020, In: *IEEE Transactions on Network Science and Engineering*. 7, 1, p. 449-465 17 p.

#### Classification of brain functional connectivity using convolutional neural networks

Shahriman, W. N. S., Phang, C. R., Numan, F. & Ting, C. M., 2020, *Sustainable and Integrated Engineering International Conference 2019 (SIE 2019)*. Bala Krishnan, M. (ed.). 1 ed. Bristol UK: IOP Publishing, Vol. 884. 6 p. (IOP Conference Series: Materials Science and Engineering).

#### Estimating brain connectivity using copula Gaussian graphical models

Gao, X., Shen, W., Ting, C-M., Cramer, S. C., Srinivasan, R. & Ombao, H., Apr 2019, *2019 IEEE 16th International Symposium on Biomedical Imaging (ISBI 2019) - Proceedings*. J. Ledesma Carbayo, M. & Ángel González Ballester, M. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 108-112 5 p. (Proceedings - International Symposium on Biomedical Imaging; vol. 2019-April).

#### Classification of EEG-based effective brain connectivity in schizophrenia using deep neural networks

Phang, C-R., Ting, C-M., Samdin, S. B. & Ombao, H., 2019, *9th International IEEE EMBS Conference on Neural Engineering*. Maharbiz, M. & Chestek, C. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 401-406 6 p. (International IEEE/EMBS Conference on Neural Engineering, NER; vol. 2019-March).

#### Detecting state changes in community structure of functional brain networks using a Markov-switching stochastic block model

Samdin, S. B., Ting, C. M. & Ombao, H., 2019, *2019 IEEE 16th International Symposium on Biomedical Imaging (ISBI 2019) - Proceedings*. J. Ledesma Carbayo, M. & Ángel González Ballester, M. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 1483-1487 5 p. (Proceedings - International Symposium on Biomedical Imaging; vol. 2019-April).

#### Exploratory analysis of brain signals through low dimensional embedding

Wang, Y., Ting, C-M., Gao, X. & Ombao, H., 2019, *9th International IEEE EMBS Conference on Neural Engineering*. Maharbiz, M. & Chestek, C. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 997-1002 6 p. (International IEEE/EMBS Conference on Neural Engineering, NER; vol. 2019-March).

#### Short-segment heart sound classification using an ensemble of deep convolutional neural networks

Noman, F., Ting, C-M., Salleh, S-H. & Ombao, H., 2019, *2019 IEEE International Conference on Acoustics, Speech, and Signal Processing - Proceedings*. Mihaylova, L., Wang, W. & Elliot, S. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 1318-1322 5 p. (ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing - Proceedings; vol. 2019-May).

#### Statistical models for brain signals with properties that evolve across trials

Ombao, H., Fiecas, M., Ting, C-M. & Low, Y. F., 15 Oct 2018, In: *NeuroImage*. 180, Part B, p. 609-618 10 p.

#### Estimating dynamic connectivity states in fMRI using regime-switching factor models

Ting, C. M., Ombao, H., Samdin, S. B. & Salleh, S. H., Apr 2018, In: *IEEE Transactions on Medical Imaging*. 37, 4, p. 1011-1023 13 p.

#### Robust facial expression recognition for MuCI: A comprehensive neuromuscular signal analysis

Hamed, M., Salleh, S. H., Ting, C. M., Astaraki, M. & Noor, A. M., Jan 2018, In: *IEEE Transactions on Affective Computing*. 9, 1, p. 102-115 14 p.

#### Performance study for multimodal client identification system using cardiac and speech signals

Hussain, H., Salleh, S-H., Ting, C-M., Noman, F., Mohammad, M. M., Latif, A. Z. A. & Al-Hamdani, O., 2018, *The 12th International Symposium on Medical Information and Communication Technology*. Ping Liu, R., Hamalainen, M., Ohno, K. & Woodward, G. (eds.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 166-171 6 p. (International Symposium on Medical Information and Communication Technology, ISMICT; vol. 2018-March).

#### Classification of heart sound signals using autoregressive model and hidden Markov model

Sh-Hussain, H., Mohamad, M. M., Zahilah, R., Ting, C-M., Ismail, K., Numan, F., Hussain, H. & Rasul, S., Aug 2017, In: *Journal of Medical Imaging and Health Informatics*. 7, 4, p. 755-763 9 p.

fMRI hemodynamic response function estimation in autoregressive noise by avoiding the drift  
Seghouane, A. K., Shah, A. & Ting, C. M., Jul 2017, In: Digital Signal Processing. 66, p. 29-41 13 p.

A unified estimation framework for state-related changes in effective brain connectivity  
Samdin, S. B., Ting, C. M., Ombao, H. & Salleh, S. H., Apr 2017, In: IEEE Transactions on Biomedical Engineering. 64, 4, p. 844-858 15 p.

Analysis of ECG biosignal recognition for client identification  
Hussain, H., Ting, C-M., Numan, F., Nasir Ibrahim, M., Izan, N. F., Mohammad, M. M. & Sh-Hussain, H., 2017, *Proceedings of the 2017 IEEE International Conference on Signal and Image Processing Applications (IEEE ICSIPA 2017)*. Khaleel Ahmed, S. (ed.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 15-20 6 p.

Heart sound segmentation using switching linear dynamical models  
Noman, F., Salleh, S-H., Ting, C-M. & Hussain, H., 2017, *2017 IEEE Global Conference on Signal and Information Processing, GlobalSIP 2017 - Proceedings*. Ji, X. (ed.). Piscataway NJ USA: IEEE, Institute of Electrical and Electronics Engineers, p. 1000-1004 5 p. (2017 IEEE Global Conference on Signal and Information Processing, GlobalSIP 2017 - Proceedings; vol. 2018-January).

Modeling effective connectivity in high-dimensional cortical source signals  
Wang, Y., Ting, C. M. & Ombao, H., Oct 2016, In: IEEE Journal of Selected Topics in Signal Processing. 10, 7, p. 1315-1325 11 p.

Heart sound monitoring system  
Sh-Hussain, H., Mohamad, M. M., Ting, C. M., Zahilah, R. & Hussain, H., Apr 2016, In: ARPN Journal of Engineering and Applied Sciences. 11, 7, p. 4748-4755 8 p.

Biosignal recognition for patients identification  
Hussain, H., Ibrahim, M. N., Ting, C-M., Numan, F., Hamed, M., Sh-Hussain, H. & Ninggal, T., 2016, *IECBES 2016 - IEEE-EMBS Conference on Biomedical Engineering and Sciences*. IEEE, Institute of Electrical and Electronics Engineers, p. 86-90 5 p.

Estimation of high-dimensional connectivity in fMRI data via subspace autoregressive models  
Ting, C-M., Seghouane, A-K. & Salleh, S-H., 2016, *2016 19th IEEE Statistical Signal Processing Workshop, SSP 2016*. IEEE, Institute of Electrical and Electronics Engineers, 7551799. (IEEE Workshop on Statistical Signal Processing Proceedings; vol. 2016-August).

Shrinkage estimation of high-dimensional vector autoregressions for effective connectivity in fMRI  
Tan, H-R., Ting, C-M., Salleh, S-H., Kamarulafizam, I. & Noor, A. M., 2016, *IECBES 2016 - IEEE-EMBS Conference on Biomedical Engineering and Sciences*. IEEE, Institute of Electrical and Electronics Engineers, p. 121-126 6 p.

Sensor space time-varying information flow analysis of multiclass motor imagery through Kalman Smoother and em algorithm  
Hamed, M., Salleh, S. H., Ting, C. M., Samdin, S. B. & Mohd Noor, A., 5 Oct 2015, *2015 International Conference on BioSignal Analysis, Processing and Systems, ICBAPS 2015*. IEEE, Institute of Electrical and Electronics Engineers, p. 118-122 5 p.

Is first-order vector autoregressive model optimal for fMRI data?  
Ting, C. M., Seghouane, A. K., Khalid, M. U. & Salleh, S. H., 21 Sept 2015, In: Neural Computation. 27, 9, p. 1857-1871 15 p.

Estimating effective connectivity from fMRI data using factor-based subspace autoregressive models  
Ting, C. M., Seghouane, A. K., Salleh, S. H. & Noor, A. M., Jun 2015, In: IEEE Signal Processing Letters. 22, 6, p. 757-761 5 p.

Estimation of stochastic volatility with long memory for index prices of FTSE Bursa Malaysia KLCI

Chen, K. C., Bahar, A., Kane, I. L., Ting, C. M. & Rahman, H. A., 2015, *2nd ISM International Statistical Conference 2014, ISM 2014: Empowering the Applications of Statistical and Mathematical Sciences*. Noar, N. A. Z. M., Zakaria, R., Yusoff, W. N. S. W., Mohamad, M. S. & Hamid, M. R. A. (eds.). American Institute of Physics, p. 73-79 7 p. (AIP Conference Proceedings; vol. 1643).

Identifying dynamic effective connectivity states in fMRI based on time-varying vector autoregressive models

Samdin, S. B., Ting, C. M., Salleh, S. H., Hamed, M. & Noor, A. M., 2015, *International Conference for Innovation in Biomedical Engineering and Life Sciences*. Ibrahim, F., Mohktar, M. S., Ahmad, M. Y. & Usman, J. (eds.). Springer, p. 243-247 5 p. (IFMBE Proceedings; vol. 56).

Modeling and estimation of single-trial event-related potentials using partially observed diffusion processes

Ting, C. M., Salleh, S. H., Zainuddin, Z. M. & Bahar, A., 2015, In: *Digital Signal Processing*. 36, C, p. 128-143 16 p.

Artifact removal from single-trial ERPs using non-Gaussian stochastic volatility models and particle filter

Ting, C. M., Salleh, S. H., Zainuddin, Z. M. & Bahar, A., Aug 2014, In: *IEEE Signal Processing Letters*. 21, 8, p. 923-927 5 p.

Multiclass self-paced motor imagery temporal features classification using least-square support vector machine

Hamed, M., Salleh, S. H., Ting, C. M., Noor, A. B. M. & Rezazadeh, I. M., 9 Feb 2014, *2014 IEEE 19th International Functional Electrical Stimulation Society Annual Conference, IFESS 2014 - Conference Proceedings*. IEEE, Institute of Electrical and Electronics Engineers, p. 79-83 5 p.

Estimating dynamic cortical connectivity from motor imagery EEG using KALMAN smoother & EM algorithm

Samdin, S. B., Ting, C. M., Salleh, S. H., Hamed, M. & Noor, A. B. M., 2014, *2014 IEEE Workshop on Statistical Signal Processing, SSP 2014*. IEEE, Institute of Electrical and Electronics Engineers, p. 181-184 4 p.

Estimation of high-dimensional brain connectivity from FMRI data using factor modeling

Ting, C. M., Seghouane, A. K., Salleh, S. H. & Noor, A. B. M., 2014, *2014 IEEE Workshop on Statistical Signal Processing, SSP 2014*. IEEE, Institute of Electrical and Electronics Engineers, p. 73-76 4 p.

Fractional ornstein-uhlenbeck for index prices of FTSE bursa Malaysia KLCI

Chen, K. C., Bahar, A. & Ting, C. M., 2014, *Proceedings of the 21st National Symposium on Mathematical Sciences: Germination of Mathematical Sciences Education and Research Towards Global Sustainability, SKSM 21*. American Institute of Physics, p. 869-874 6 p. (AIP Conference Proceedings; vol. 1605).

Discriminative tandem features for HMM-based EEG classification

Ting, C. M., King, S., Salleh, S. H. & Ariff, A. K., 2013, *2013 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2013*. p. 3957-3960 4 p. (Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS).

Linear dynamic models for classification of single-trial EEG

Samdin, S. B., Ting, C. M., Salleh, S. H., Ariff, A. K. & Mohd Noor, A. B., 2013, *2013 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2013*. p. 4827-4830 4 p. (Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS).

Acoustic cardiac signals analysis: a Kalman filter-based approach

Salleh, S. H., Hussain, H. S., Swee, T. T., Ting, C. M., Noor, A. M., Pipatsart, S., Ali, J. & Yupapin, P. P., 2012, In: *International Journal of Nanomedicine*. 7, p. 2873-2881 9 p.

An expectation-maximization algorithm based Kalman smoother approach for single-trial estimation of event-related potentials

Ting, C. M., Samdin, S. B., Salleh, S. H., Omar, M. H. & Kamarulafizam, I., 2012, *2012 Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2012*. p. 6534-6538 5 p. (Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS).

Kalman filter for ABR signal analysis

Hafizi Omar, M., Salleh, S. H., Ming, T. C., Ariffi Suraya, R., Kamarulafizam & Swee, T. T., 2012, *PIERS 2012 Kuala Lumpur - Progress in Electromagnetics Research Symposium, Proceedings*. p. 1885-1888 4 p. (Progress in Electromagnetics Research Symposium).

Wave V detection using continuous wavelet transform of auditory brainstem response signal

Rushaidin, M. M., Salleh, S. H., Hafizi, O., Mahyar, H., Ting, C. M. & Ariff, A. K., 2012, *PIERS 2012 Kuala Lumpur - Progress in Electromagnetics Research Symposium, Proceedings*. p. 1889-1893 5 p. (Progress in Electromagnetics Research Symposium).

**Spectral estimation of nonstationary EEG using particle filtering with application to event-related desynchronization (ERD)**

Ting, C. M., Salleh, S. H., Zainuddin, Z. M. & Bahar, A., Feb 2011, In: *IEEE Transactions on Biomedical Engineering*. 58, 2, p. 321-331 11 p.

Speaker verification using Gaussian mixture model (GMM)

Hussain, H., Salleh, S. H., Ting, C. M., Ariff, A. K., Kamarulafizam, I. & Suraya, R. A., 2011, *5th Kuala Lumpur International Conference on Biomedical Engineering 2011, BIOMED 2011*. p. 560-564 5 p. (IFMBE Proceedings; vol. 35 IFMBE).

ECG based personal identification using extended Kalman filter

Ting, C. M. & Salleh, S. H., 2010, *10th International Conference on Information Sciences, Signal Processing and their Applications, ISSPA 2010*. p. 774-777 4 p.

Face biometrics based on principal component analysis and linear discriminant analysis

Chan, L. H., Salleh, S. H. & Ting, C. M., 2010, In: *Journal of Computer Science*. 6, 7, p. 693-699 7 p.

PCA and LDA-based face verification using back-propagation neural network

Chan, L. H., Salleh, S. H., Ting, C. M. & Arif, A. K., 2010, *10th International Conference on Information Sciences, Signal Processing and their Applications, ISSPA 2010*. p. 728-732 5 p.

Malay continuous speech recognition using fast HMM match algorithm

Ting, C. M., Salleh, S. H. & Ariff, A. K., 2009, *2009 4th IEEE Conference on Industrial Electronics and Applications, ICIEA 2009*. p. 2424-2427 4 p.

PCA, LDA and neural network for face identification

Chan, L. H., Salleh, S. H. & Ting, C. M., 2009, *2009 4th IEEE Conference on Industrial Electronics and Applications, ICIEA 2009*. p. 1256-1259 4 p.

Face identification and verification using PCA and LDA

Chan, L. H., Salleh, S. H., Ting, C. M. & Ariff, A. K., 2008, *Proceedings - International Symposium on Information Technology 2008, ITSIm*. IEEE, Institute of Electrical and Electronics Engineers, (Proceedings - International Symposium on Information Technology 2008, ITSIm; vol. 2).

Application of Malay speech technology in Malay speech therapy assistance tools

Tan, T. S., Helbin-Liboh, Ariff, A. K., Ting, C. M. & Salleh, S. H., 2007, *2007 International Conference on Intelligent and Advanced Systems, ICIAS 2007*. p. 330-334 5 p.

Automatic phonetic segmentation of Malay speech database

Ting, C. M., Salleh, S. H., Tan, T. S. & Ariff, A. K., 2007, *2007 6th International Conference on Information, Communications and Signal Processing, ICICS*. IEEE, Institute of Electrical and Electronics Engineers

Malay sign language gesture recognition system

Tan, T. S., Salleh, S. H., Ariff, A. K., Ting, C. M., Siew, K. S. & Leong, S. H., 2007, *2007 International Conference on Intelligent and Advanced Systems, ICIAS 2007*. p. 982-985 4 p.

Text independent speaker identification using gaussian mixture model

Ting, C. M., Salleh, S. H., Tan, T. S. & Ariff, A. K., 2007, *2007 International Conference on Intelligent and Advanced Systems, ICIAS 2007*. p. 194-198 5 p.

Pre-processing of input features using lpc and warping process

Sudirman, R., Salleh, S. H. & Ming, T. C., 2005, *2005 1st International Conference on Computers, Communications and Signal Processing with Special Track on Biomedical Engineering, CCSP 2005*. p. 300-303 4 p.