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PROFESSIONAL EXPERIENCE

Professor <i>Universiti Malaya, Malaysia.</i>	2022 - Present
Under Secretary (Data Strategic and Foresight) <i>Ministry of Science, Technology and Innovation (MOSTI), Malaysia.</i>	2020 - 2022
Associate Professor <i>Universiti Malaya, Malaysia.</i>	2017 - 2022
Deputy Dean (Research & Development) <i>Faculty of Comp. Sci., & Info, Tech. Universiti Malaya, Malaysia.</i>	2019 - 2020
Head of Department (Artificial Intelligence) <i>Faculty of Comp. Sci., & Info, Tech. Universiti Malaya, Malaysia.</i>	2017 - 2019
Senior Lecturer <i>Universiti Malaya, Malaysia.</i>	2010 - 2017

EDUCATION

Doctor of Philosophy (Ph.D.) <i>University of Portsmouth, Portsmouth, U.K.</i> Thesis: Fuzzy Qualitative Human Motion Analysis	2008
M.Sc. Communication Systems Engineering <i>University of Portsmouth, Portsmouth, U.K.</i> Thesis: GPS-SMS Vehicle Tracking System	2005
B.Eng. (Hons) Electronics Engineering <i>Multimedia University, Malaysia</i>	2003

GRANTS (TOTAL RM 3.8M SECURED AS PI)

- *On-going Projects (only as Principal Investigator (PI) are listed)*
 - **Memosa@ Aicp: A Digital Health Platform for Early Detection of Oral Cancer (MOSTI005-2023SRF).** (MYR 487,000, 2022-2024) – Cancer Research Malaysia.
 - **Intellectual Property Protection Of Deep Learning Model (ST041-2021).** (MYR 12,000; 2021-2023) – SATU Joint Research Scheme (JRS), Taiwan
- *Completed Projects (only as Principal Investigator (PI) are listed)*
 - **Visual Question-answering (VQA) System With Once-for All Network And Intel Xeon Avx512 Vnni Platform (PV013-2021).** (MYR 147,600; 2021-2022) – Intel Microelectronics (M) Sdn Bhd, Malaysia.
 - **Enhancing Organic Light Emitting Materials Discovery Through Generative Adversarial Network (IIRG005C-19FNW).** (MYR 84,644.40; 2019-2022) – Interdisciplinary Research Grant Scheme (IIRG), University of Malaya, Malaysia.
 - **Explainable A.I.: A Fundamental Study to Elucidate The Inner Workings of Artificial Intelligence Models (FP021-2018A).** (MYR 117,000; 2019-2022) - Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Malaysia.
 - **Classification of Oral Lesions using Deep Learning for Elderly Detection of Oral Cancer (MR/S013865/1).** (GBP 145,000 (~ MYR 725,000); 2018-2021) – Pump-Priming, Medical Research Council, U.K.
 - **Connecting Visual Impairment Society with Big Data: An Image Captioning Approach (FG002-17AFR).** (MYR 99,0000; 2017-2019) – Frontier Research Grant, University of Malaya.
 - **Investigating A Zero-shot Learning Model for Improving E-archives Architecture (FP004-2016).** (MYR 64,400; 2016-2018) – Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Malaysia.
 - **Intelligent System to Support post-Stroke Rehabilitation (NRCP1516/4/33).** (GBP 12,750 (~ MYR 63,750); 2016-2017) – Newton Research Collaboration Prog., The Royal Academy of Engineering, U.K.
 - **Towards Big Analytics – A Fundamental Framework for Performance Enhancement in Visual Surveillance with Semantically-linked Big Data (FP070-2015A).** (MYR 85,000; 2015-2017) – Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Malaysia.

- **Smart, Safe and Green City – A Crime Prevention System using Smart Vision and Green Environmental Architecture (PR001-2015B).** (MYR 108,500; 2015-2017) – Prototype Research Grant Scheme (PRGS), Ministry of Higher Education, Malaysia.
- **Understand Human Behaviour for Anomaly Event Detection in Video Sequences (PR023-2012D).** (MYR 90,500; 2013-2016) - University Malaya Research Grant (UMRG), University of Malaya, Malaysia.
- **Intelligent Performance Enhancement Framework for Multi-modal Vision Architecture (I-MViA): Theoretical development, mathematical formulation and computational study (FP027-2013A).** (MYR 147,000; 2013-2016) – Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Malaysia.
- **Human-Robot Interaction (HRI) Algorithm in Robot-based Intervention of Elderly with Alzheimer’s (UM.C/625/1/HIR/MOE/FCSIT/08).** (MYR 1,164,850; 2012–2016) - Ministry of Higher Education-High Impact Research Grant (MoHE-HIR), University of Malaya, Malaysia.
- **A Fuzzy Qualitative-based Framework to Understand Human Behaviour (FQ-HuB) (CG065-2013).** (MYR 64,500; 2013-2014) - Program Rakan Penyelidikan UM (PRPUM), University of Malaya, Malaysia.
- **ACCESS – Activity Analysis in Context Specific Scenarios (UM.C/625/1/HIR/037).** (MYR 229,000; 2010–2013) - Chancellery - High Impact Research Grant (Chan-HIR), University of Malaya, Malaysia.
- **Modelling Human Actions by Local Static & Dynamic Descriptor (MALaya) (RG110/11AET).** (MYR 100,000; 2010–2012) – University Malaya Research Grant (UMRG), University of Malaya, Malaysia.

PUBLICATIONS (SELECTED)

Journal Articles

1. Lim, J.H. and Chan, C.S. (2023). “Mask-guided Network for Image Captioning”, *Pattern Recognition Letters*, vol. 173, pp. 79-86.
2. Lin, C.T., Kew, J.L., Chan, C.S., Lai, S.H. and Zach, C. (2023). “Cycle-object Consistency for Image-to-image Domain Adaptation”, *Pattern Recognition*, vol. 138, p.109416.
3. Yang, Q., Huang, A., Fan, L., Chan, C.S., Lim, J.H., Ng, K.W., Ong, D.S. and Li, B. (2023). “Federated Learning with Privacy-preserving and Model IP-right-protection”, *Machine Intelligence Research*, vol. 20(1), pp.19-37.
4. Liong, G.B., See, J. and Chan, C.S. (2023) “Spot-then-Recognize: A Micro-Expression Analysis Network for Seamless Evaluation of Long Videos”, *Signal Processing: Image Communication*, vol. 110, pp. 116875.

5. Fan, L., Ng, K.W., Chan, C.S. and Yang, Q. (2022) “DeepIPR: Deep Neural Network Ownership Verification with Passports”, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 44(10), pp. 6122-6139.
6. Tan, J.H., Tan, Y.H., Chan, C.S. and Chuah, J.H. (2022) “ACORT – A Compact Object Relation Transformer for Parameter Efficient Image Captioning”, *Neurocomputing*, vol. 482, pp. 60-72.
7. Tan, J.H., Chan, C.S., and Chuah, J.H. (2022) “End-to-End Supermask Pruning: Learning to Prune Image Captioning Models”, *Pattern Recognition*, vol. 122, pp. 108366.
8. Lim, J.H., Chan, C.S., Ng, K.W., Fan, L., and Yang, Q. (2022) “Protect, Show, Attend and Tell: Empowering Image Captioning Models with Ownership Protection”, *Pattern Recognition*, vol. 122, pp. 108285.
9. Japar, N., Kok, V.J. and Chan, C.S. (2021) “Collectiveness Analysis with Visual Attributes”, *Neurocomputing*, vol. 463, pp. 77-90.
10. Lim, Y.Q., Chan, C.S. and Loo, F.Y. (2021) “ClaviNet: Generate Music with Different Musical Styles”, *IEEE MultiMedia*, vol. 28(1), pp. 83-93.
11. Japar, N., Kok, V.J. and Chan, C.S. (2021) “Coherent Group Detection in Still Image”, *Multimedia Tools and Applications*, vol. 80, pp. 22007-22026.
12. Chang, Y.L., Chan, C.S. and Remagnino, P. (2021) “Action Recognition on Continuous Video”, *Neural Computing and Applications*, vol. 33(4), pp. 1233-1243.
13. Pang, T., Wong, J.H.D., Ng, W.L. and Chan, C.S. (2021) “Semi-supervised GAN-based Radiomics Model for Data Augmentation in Breast Ultrasound Mass Classification”, *Computer Methods and Programs in Biomedicine*, vol. 203, pp. 106018.
14. Chng C.K., Chan, C.S. and Liu, C-L. (2020) “Total-Text: Towards Orientation Robustness in Scene Text Detection”, *International Journal on Document Analysis and Recognition*, vol. 23, pp. 31-52.
15. Tan, J.H., Chan, C.S. and Chuah, J.H. (2019) “COMIC: Compact Image Captioning with Attention”, *IEEE Transactions on Multimedia*, vol. 21(10), pp. 2668-2696.
16. Loh, Y.P., X. Liang and Chan, C.S. (2019) “Low-light image enhancement using Gaussian Process for features retrieval”, *Signal Processing: Image Communication*, vol. 74, pp. 175-190.
17. Tan, Y.H. and Chan, C.S. (2019) “Phrase-based Image Caption Generator with Hierarchical LSTM Network” *Neurocomputing*, vol. 333, pp. 86-100.

18. Loh, Y.P. and Chan, C.S. (2019) “Getting to Know Low-light Images with The Exclusively Dark Dataset”, *Computer Vision and Image Understanding*, vol. 178, pp. 30-42.
19. Tan, W.R., Chan, C.S., Aguirre, H. and Tanaka, K. (2019) “Improved ArtGan for Conditional Synthesis of Natural Image and Artwork”, *IEEE Transactions on Image Processing*, vol. 28(1), pp. 394-409.
20. Kok, V.J. and Chan, C.S. (2018) “Granular-based Dense Crowd Density Estimation”, *Multimedia Tools and Applications*, vol. 77(15), pp. 20227-20246.
21. Lee, S.H., Chan, C.S. and Remagnino, P. (2018) “Multi-Organ Plant Classification based on Convolutional and Recurrent Neural Network”, *IEEE Transactions on Image Processing*, vol. 27(9), pp. 4287-4301.
22. Ahmadian, A., Salahshour, S., Chan, C.S. and Baleanu, D. (2018) “Numerical Solutions of Fuzzy Differential Equations by an Efficient Runge-Kutta Method with Generalized Differentiability”, *Fuzzy Sets and Systems*, vol. 331, pp. 47-67.
23. Lee, S.H., Chan, C.S., Mayo, S. and Remagnino, P. (2017) “How Deep Learning Extracts and Learns Leaf Features for Plant Classification”, *Pattern Recognition*, vol. 71, pp. 1-13.
24. Tan, W.R., Chan, C.S., Aguirre, H.E. and Tanaka, K. (2017) “Fuzzy Qualitative Deep Compression Network”, *Neurocomputing*, vol. 251, pp. 1-15.
25. Kok, V.J. and Chan, C.S. (2017) “GrCS: Granular Computing based Crowd Segmentation”, *IEEE Transactions on Cybernetics*, vol. 47(5), pp. 1157-1168.
26. Ahmadian, A., Salahshour, S. and Chan, C.S. (2017) “Fractional Differential Systems: A Fuzzy Solution based on Operational Matrix of Shifted Chebyshev Polynomials and its Applications”, *IEEE Transactions on Fuzzy Systems*, vol. 25(1), pp. 218-236.
27. Lim, C.H. and Chan, C.S. (2016) “Fuzzy Qualitative Human Model for Viewpoint Identification”, *Neural Computing and Applications*, vol. 27(4), pp. 845-856.
28. Vats, E. and Chan, C.S. (2016). “Early Detection of Human Actions – A Hybrid Approach”, *Applied Soft Computing*, vol. 46, pp. 953-966.
29. Kok, V.J., Lim, M.K. and Chan, C.S. (2016) “Crowd Behaviour Analysis: A Review where Physics meets Biology”, *Neurocomputing*, vol. 177, pp. 342-362.
30. Tang, S. and Chan, C.S. (2016) “Orthogonal Planar Search (OPS) for Coronary Artery Centerline Extraction”, *Signal, Image and Video Processing*, vol. 10(2), pp. 335-342.

31. Vats, E., Lim, C.K. and Chan, C.S. (2015) “An Improved BK Sub-Triangle Product Approach for Scene Classification”, *Journal of Intelligent & Fuzzy Systems*, vol. 29 (5), pp. 1923-1931.
32. Hoo, W.L. and Chan, C.S. (2015) “Recognizing Unknown Objects with Attributes Relationship Model”, *Expert Systems with Application*, vol. 42 (23), pp. 9279-9283.
33. Hoo, W.L. and Chan, C.S. (2015) “Zero-shot Object Recognition System based on Topic Model”, *IEEE Transactions on Human-Machine Systems*, vol. 45(4), pp. 518-525
34. Tang, D., Yusuf, B., Botzheim, J., Kubota, N. and Chan, C.S. (2015) “A Novel Multimodal Communication Framework using Robot Partner for Aging Population”, *Expert Systems with Application*, vol. 42 (9), pp. 4540-4555.
35. Lim, C.H., Vats, E. and Chan, C.S. (2015) “Fuzzy Human Motion Analysis: A Review”, *Pattern Recognition*, vol. 48 (5), pp. 1773-1796.
36. Ahmadian, A., Salahshour, S. and Chan, C.S. (2015) “A Runge-Kutta Method with Reduced Number of Functional Evaluations to Solve Hybrid Fuzzy Differential Equations”, *Soft Computing*, vol. 19(4), pp. 1051-1062.
37. Hoo, W.L. and Chan, C.S. (2015) “Keybook: Unbias Object Recognition using Keywords”, *Expert Systems with Application*, vol. 42 (8), pp. 3991-3999.
38. Salahshour, S., Ahmadian, A. and Chan, C.S. (2015) “Successive Approximation Method for Caputo q-fractional IVPs”, *Communications in Nonlinear Science and Numerical Simulations*, vol. 24 (1-3), pp. 153-158.
39. Lim, C.K. and Chan, C.S. (2015) “A Weighted Inference Engine based on Interval-valued Fuzzy Relational Theory”, *Expert Systems with Application*, vol. 42 (7), pp. 3410-3419.
40. Lee, H.Y., Hoo, W.L. and Chan, C.S. (2015) “Color Video Denoising using Epitome and Sparse Coding”, *Expert Systems with Application*, vol. 42 (2), pp. 751-759.
41. Risnumawan, A., Palaiahnakote, S., Chan, C.S. and Tan, C.L. (2014) “A Robust Arbitrary Text Detection System for Natural Scene Images”, *Expert Systems with Application*, vol. 41 (18), pp. 8027-8048.
42. Lim, C.H.; A. Risnumawan and Chan, C.S. (2014) “Scene Image is Non-Mutually Exclusive – A Fuzzy Qualitative Scene Understanding” *IEEE Transactions on Fuzzy Systems*, vol. 22 (6), pp. 1541-1556.
43. Vembarasan, V., Balasubramaniam, P. and Chan, C.S. (2014) “Robust Synchronization of Uncertain Chaotic Neural Networks with Randomly

- Occurring Uncertainties and Non-fragile Output Coupling Delayed Feedback Controllers”, *Nonlinear Dynamics*, vol. 78 (3), pp. 2031-2047.
44. Vembarasan, V., Balasubramaniam, P. and Chan, C.S. (2014) “Non-fragile State Observer Design for Neural Networks with Markovian Jumping Parameters and Time-delays”, *Nonlinear Analysis: Hybrid Systems*, vol. 14, pp. 61-73.
 45. Lim, M.K., Chan, C.S., Monekosso, D. and Remagnino, P. (2014) “Detection of Salient Regions in Crowded Scenes”, *IET Electronics Letters*, vol. 50 (5), pp. 363-365.
 46. Lim, M.K., Tang, S. and Chan, C.S. (2014) “iSurveillance: Intelligent framework for Multiple Events Detection in Surveillance Videos”, *Expert Systems with Applications*, vol. 41 (10), pp. 4704-4715.
 47. Lim, M.K., Chan, C.S., Monekosso, D. and Remagnino, P. (2014) “Refined Particle Swarm Intelligence Method for Abrupt Motion Tracking” *Information Sciences*, vol. 283, pp. 267-287.
 48. Tan, W.R.; Chan, C.S.; Yogarajah, P. and Condell, J. (2012) “A Fusion Approach for Efficient Human Skin Detection” *IEEE Transactions on Industrial Informatics*, vol. 8(1), pp. 138-147.
 49. Lim, C.K. and Chan, C.S. (2011) “Logical Connectives and Operativeness of BK Sub-triangle Product in Fuzzy Inferencing” *International Journal of Fuzzy Systems*, vol. 13(4), pp. 237-245.
 50. Chan, C.S. and Liu, H. (2009) “Fuzzy Qualitative Human Motion Analysis” *IEEE Transactions on Fuzzy Systems*, vol. 17(4), pp. 851-862.
 51. Chan, C.S., Liu, H. and Brown, D.J. (2007) “Adapting Robot Kinematics for Human-arm Motion Recognition” *International Journal of Knowledge-Based & Intelligent Engineering Systems*, vol. 11(4), 2007, pp.207-217.
 52. Chan, C.S., Liu, H. and Brown, D.J. (2007) “Recognition of Human Motion from Qualitative Normalised Templates” *Journal of Intelligent and Robotic Systems*, vol. 48(1), Springer, pp.79-95.

Refereed Conference Papers

53. Tan, Z.Q., Wong, H.S. and Chan, C.S. “An Embarrassingly Simple Approach for Intellectual Property Rights Protection on Recurrent Neural Networks”, *Proceedings of the 2nd Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics and the 12th International Joint Conference on Natural Language Processing (AACL-IJCNLP)*, November 2022.
(oral long paper, acceptance rate = 15.7%)

54. Beh, J.C., Ng, K.W., Kew, J.L., Lin, C.T., Chan, C.S., Lai, S.H. and Zach, C. “CyEDA: Cycle-Object Edge Consistency Domain Adaptation”, *IEEE International Conference on Image Processing (ICIP)*, Bordeaux, France, October 2022.
55. Lim, S.W., Chan, C.S., Faizal, E.R.M. and Ewe, K.H. “ProX: A Reversed Once-for-All Network Training Paradigm for Efficient Edge Models Training in Medical Imaging”, *IEEE International Conference on Image Processing (ICIP)*, Bordeaux, France, October 2022.
56. Hsu, P., Lin, C-T., Ng, C.C., Kew, J.L., Tan, M.Y., Lai, S-H., Chan, C.S. and Zach, C. “Extremely Low-light Image Enhancement with Scene Text Restoration”, *26th International Conference on Pattern Recognition (ICPR)*, Aug., 2022.
57. Hoe, J.T., Ng, K.W., Zhang, T., Chan, C.S., Song, Y-Z. and Tao, X. “One Loss for All: Deep Hashing with a Single Cosine Similarity based Learning Objective”, *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS)*, Dec., 2021.
58. Ong, D.S., Chan, C.S., Ng, K.W., Fan, L. and Yang, Q. “Protecting Intellectual Property of Generative Adversarial Networks from Ambiguity Attack”, *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, June, 2021.
59. Lim, J.Q. and Chan, C.S. “From Gradient Leakage to Adversarial Attacks in Federated Learning” *IEEE International Conference on Image Captioning (ICIP)*, Anchorage, Alaska, USA, Sept. 2021.
60. Lim, J.H., Tan, C.S., Chan, C.S. Welikala, R.A., Remagnino, P., Rajendran, S., Kallarakkal, T.G., et. al. “D’OraCa: Deep Learning-based classification of Oral Lesions with Mouth Landmark Guidance for Early Detection of Oral Cancer”, *25th UK Conference on Medical Image Understanding and Analysis (MIUA)*, Oxford, U.K, 2021.
(Best Student Paper Award)
61. Fan, L., Ng, K.W., Ju, C., Zhang T. and Chan, C.S. “Deep Polarized Network for Supervised Learning of Accurate Binary Hashing Codes”, *International Joint Conference on Artificial Intelligence (IJCAI)*, Yokohama, Japan, 2020.
62. Lim, Y.Q., Chan, C.S. and Loo, F.Y. “Style-conditioned Music Generation” *IEEE International Conference on Multimedia and Expo (ICME)*, London, U.K., July 2020.
(Top 10% papers)
63. Wang, X., Liu, Y., Shen, C., Ng, C.C., Luo, C., Jin, L., Chan, C.S., Hengel, A.v. and Wang, L. “On the General Value of Evidence, and Bilingual Scene-Text Visual Question Answering”, *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Washington, USA, June, 2020.

64. Fan, L., Ng, K.W. and Chan, C.S. “Rethinking Deep Neural Network Ownership Verification: Embedding Passports to Defeat Ambiguity Attacks”, *Thirty-third Conference on Neural Information Processing Systems (NeurIPS), Vancouver, Canada, Dec., 2019.*
65. Lim, J.H. and Chan, C.S. “Mask Captioning Network”, *IEEE International Conference on Image Captioning (ICIP), Taipei, Taiwan, Sept. 2019.*
66. Ng, K.W., Fan, L. and Chan, C.S. “A Universal Logic Operator for Interpretable Deep Convolution Networks” *AAAI Workshop on Network Interpretability for Deep Learning, Hawaii, USA, Jan. 2019.*
67. Hoo, W.L. and Chan, C.S. “Anisotropic Partial Differential Equation based Video Saliency Detection”, *IEEE International Conference on Image Processing (ICIP), Athens, Greece, Oct., 2018.*
68. Chng, C.K. and Chan, C.S. “Total-Text: A Comprehensive Dataset for Scene Text Detection and Recognition”, *14th IAPR International Conference on Document Analysis and Recognition (ICDAR), Kyoto, Japan, Nov., 2017.*
69. Tan, W.R., Chan, C.S., Aguirre, H. and Tanaka, K. “ArtGAN: Artwork Synthesis with Conditional Categorical GANs”, *IEEE International Conference on Image Processing (ICIP), Beijing, PR China, Sept., 2017.*
70. Lee, S.H., Chang, Y.L., Chan, C.S. and Remagnino, P. “HGO-CNN: Hybrid Generic-Organ Convolutional Neural Network for Multi-Organ Plant Classification”, *IEEE International Conference on Image Processing (ICIP), Beijing, PR China, Sept., 2017.*
71. Khare, V., Palaiahnakote, S., Ahlad, K., Chan, C.S., Lu, T. and Blumenstien, M. “A Quad Tree based Method for Blurred and Non-blurred Video Text Frames Classification”, *IAPR International Conference on Pattern Recognition (ICPR), Cancun, Mexico, Dec., 2016.*
72. Tan, Y.H. and Chan, C.S. “phi-LSTM: A Phrase-based Hierarchical LSTM Model for Image Captioning”, *Asian Conference on Computer Vision (ACCV), Taipei, Taiwan, Nov., 2016.*
73. Tan, W.R., Chan, C.S., Aguirre, H. and Tanaka, K. “A Deep Convolution Network for Fine-art Paintings Classification”, *Proceedings of the IEEE International Conference on Image Processing (ICIP), Phoenix, USA, Sept., 2016.*
74. Jhavar A., Chan, C.S., Monekosso, D. and Remagnino, P. “Fuzzy-Rough based Decision System for Gait Adopting Instance Selection”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Vancouver, Canada, July, 2016.*

75. Loh, Y.P., and Chan, C.S. “Unveiling Contrast in Darkness”, *3rd Asian Conference on Pattern Recognition (ACPR), Kuala Lumpur, Malaysia, Nov., 2015.*
76. Lee, S.H., Chan, C.S., Wilkin, P. and Remagnino, P. “Deep-Plant: Plant Identification with Convolutional Neural Networks”, *Proceedings of the IEEE International Conference on Image Processing (ICIP), Quebec City, Canada, Sept., 2015.*
77. Salahshour, S., Ahmadian, A., Chan, C.S. and Baleanu, D. “Toward the Existence of Solutions of Fractional Sequential Differential Equations with Uncertainty”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Istanbul, Turkey, Aug., 2015.*
78. Vats, E., Lim, C.K. and Chan, C.S. “Early Human Actions Detection using BK Sub-triangle Product”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Istanbul, Turkey, Aug., 2015.*
(Best Student Paper Nomination)
79. Risnumawan, A. and Chan, C.S. “Text Detection via Edgeless Stroke Width Transform”, *International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS), Kuching, Malaysia, Dec., 2014.*
80. Lim, M.K., Kok, V.J., Loy, C.C. and Chan, C.S. “Crowd Saliency Detection via Global Similarity Structure”, *IAPR International Conference on Pattern Recognition (ICPR), Stockholm, Sweden, Aug., 2014.*
81. Hoo, W.L., Kim, T-K., Pei, Y. and Chan, C.S. “Enhanced Random Forest with Image/Patch Level Learning for Image Understanding”, *IAPR International Conference on Pattern Recognition (ICPR), Stockholm, Sweden, Aug., 2014.*
82. Ahmadian, A., Chan, C.S., Salahshour, S. and Vembarasan, V. “FTFBE: A Numerical Approximation for Fuzzy Time-Fractional Bloch Equation”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Beijing, China, July, 2014.*
83. Hoo, W.L. and Chan, C.S. “Plsa-based Zero Shot Learning”, *Proceedings of the IEEE International Conference on Image Processing (ICIP), Melbourne, Australia, Sept., 2013.*
84. Lim, C.H. and Chan, C.S. “Fuzzy Action Recognition for Multiple Views within Single Camera”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Hyderabad, India, July, 2013.*
85. Vats, E., Jhavar, A., Tripathy, B.K., and Chan, C.S. “Generalised Approximate Equalities based on Rough Fuzzy Sets and Rough Measure of Fuzzy Sets”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Hyderabad, India, July, 2013.*

86. Lim, C.K. and Chan, C.S. “Inference Engine based on Interval Type-2 Fuzzy BK Subproduct”, *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Hyderabad, India, July, 2013.*
87. Tang, S.L. and Chan, C.S. “A Neighbourhood Search and Feedback for Coronary Artery Centerline Tracking”, *Proceedings of the IAPR Conference on Machine Vision Applications (MVA), Kyoto, Japan, May, 2013.*
88. Lim, M.K., Chan, C.S., Monekosso, D. and Remagnino, P. “SwATrack: A Swarm Intelligence-based Abrupt Motion Tracker”, *Proceedings of the IAPR Conference on Machine Vision Applications (MVA), Kyoto, Japan, May, 2013.*
89. Lim, C.K. and Chan, C.S. “Fuzzy Set and Multi Description Property” *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Brisbane, Australia, June, 2012, pp. 1-8.*
90. Lim, C.H. and Chan, C.S. “A Fuzzy Qualitative Approach for Scene Classification” *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Brisbane, Australia, June, 2012, pp. 1-8.*
91. Lam, M.C., Prabuwo, A.S., Arshad, H. and Chan, C.S. “A Real-Time Vision Based Framework for Human-Robot Interaction”, *Lecture Notes in Computer Science (LNCS), vol. 4066, Springer 2011, pp. 257-267.*
(Best Paper Award in IVIC-2011)
92. Chan, C.S., Liu, H., and Lai, W.K. “Fuzzy Qualitative Complex Actions Recognition” *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Barcelona, Spain, June, 2011, pp. 1-8.*
93. Kiran, M., Teng, S.L., Chan, C.S. and Lai, W.K. “Human Posture Classification using Hybrid Particle Swarm Optimisation” *Proceedings of the 10th International Conference on Information Sciences, Signal Processing and their applications (ISSPA), Kuala Lumpur, Malaysia, 2010, pp. 778-781.*
(Best Paper Award)
94. Hanapiah, F., Al-Obaidi, A. and Chan, C.S. “Anomaly Detection over Spatiotemporal Object Using Adaptive Piecewise Model” *Lecture Notes in Computer Science (LNCS), vol. 6230, Springer 2010, pp. 421-432.*
95. Shin, H. Reyes, N.H., Barczak, A. and Chan, C.S. “Colour Object Classification Using the Fusion of Visible and Near-Infrared Spectra” *Lecture Notes in Computer Science (LNCS), vol. 6230, Springer 2010, pp. 498-509.*
96. Chan, C.S. and Liu, H. “GMM-QNT Hybrid Framework for Vision based Human Motion Analysis” *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Jeju Island, Korea, 2009, pp. 1820-1825.*
97. Chan, C.S., Liu, H., Brown, D.J. and Kubota, N. “A Fuzzy Qualitative Approach to Human Motion Recognition” *Proceedings of the IEEE*

International Conference on Fuzzy Systems (FUZZ-IEEE), Hong Kong, June, 2008, pp. 1242-1249.

98. Chan, C.S., Liu, H. and Brown, D.J. “An Effective Human Motion Classification Approach using Knowledge Representation in Qualitative Normalised Templates” *Proceedings of the IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), London, U.K., July 2007, pp. 1-6.*
99. Chan, C.S., Liu, H. and Brown, D.J. “Human Motion Classification using Qualitative Normalised Templates” *Proceedings of the 2006 UK Workshop on Computational Intelligence (UKCI), Leeds, U.K., 2006, pp. 127-134.*
100. Chan, C.S., Liu, H. and Brown, D.J. “Human Arm-Motion Classification using Qualitative Normalised Templates” *Lecture Notes in Computer Science (LNCS), vol. 4251 (Part I), Springer 2006, pp. 639-646.*
(Best Student Paper Award)

PROFESSIONAL SERVICES

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| 2022 | Local arrangement chair , 16 th Asian Conference on Computer Vision (ACCV), Macau SAR, China
Award chair , International Symposium on Intelligence Signal Processing and Communication Systems (ISPACS), Penang, Malaysia |
| 2021 | Brave new ideas chair , ACM Multimedia Asia (ACM-MMAAsia), Gold Coast, Australia
Competition organizer , RRC-Integrated Circuit Text Spotting and Aesthetic Assessment, 16 th International Conference on Document Analysis and Recognition (ICDAR), Lausanne, Switzerland |
| 2020 | General chair , 13 th International Conference on Intelligent Robotics and Applications (ICIRA), Kuala Lumpur, Malaysia |
| 2019 | General chair , IEEE 21 st International Workshop on Multimedia Signal Processing (MMSP), Kuala Lumpur, Malaysia |
| 2018 | Workshop organizer , IEEE International Joint Conference on Artificial Intelligence (IJCAI), Stockholm, Sweden
Guest Editor , special issue on The Deep Learning in Computational Photography, <i>Signal Processing: Image Communication</i> (Elsevier) |
| 2017 | Finance co-chair , 9 th Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA), Malaysia
Co-Chair , special session on Fuzzy Set Theory in Computer Vision, (FUZZ-IEEE), Italy
Guest Editor , special issue on Feature and Deep Learning in Remote Sensing Applications, <i>Journal of Applied Remote Sensing (JARS, SPIE)</i> |

- 2016 **Chapter Chair**, IEEE Computational Intelligence Society (IEEE-CIS), Malaysia
Honorary Treasurer, Institute of Engineering and Technology, IET (Malaysia)
Regional Chair, 7th International Conference on Imaging for Crime Detection and Prevention (ICDP), Spain
Publication Chair, 8th Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA), Korea
Co-Chair, special session on Fuzzy Set Theory in Computer Vision, (FUZZ-IEEE), Canada
- 2015 **Organizing Chair**, IAPR 3rd Asian Conference on Pattern Recognition, (ACPR), Malaysia
Honorary Treasurer, Institute of Engineering and Technology, IET (Malaysia)
Chapter Chair, IEEE Computational Intelligence Society (IEEE-CIS), Malaysia
Publicity Co-Chairs, 19th Asia Pacific Symposium on Intelligent and Evolutionary Systems (IES), Thailand
Regional Chair, 6th International Conference on Imaging for Crime Detection and Prevention (ICDP), UK
Co-Chair, special session on Fuzzy Set Theory in Computer Vision, (FUZZ-IEEE), Turkey
- 2014 **Chapter Chair**, IEEE Computational Intelligence Society (IEEE-CIS), Malaysia
Symposium Chair, INNS Symposium on Vision and Image Processing (SoVIP), Brunei
Publication Chair, 22nd International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS), Malaysia
Co-Chair, special session on Cognitive Science and Computational Intelligence (APSIPA), Cambodia
Co-Chair, special session on Fuzzy Set Theory in Computer Vision, (FUZZ-IEEE), China
Guest Editor, special issue on Visual Communication and Image Processing, Signal, Image and Video Processing (SIViP, Springer)
- 2013 **General Chair**, IEEE Conference on Visual Communication and Image Processing (VCIP), Malaysia
Guest Editor, special issue on New Trend of Computational Intelligence in Human-Robot Interaction, Information Sciences (INS, Elsevier)
Co-Chair, special session on Computational Intelligence for Cognitive Robotics (FUZZ-IEEE), India
Regional Chair, 5th International Conference on Imaging for Crime Detection and Prevention (ICDP), UK
- 2012 **Symposium Chair**, INNS (Thailand)
- 2011 **Co-Chair**, special session on Fuzzy Robotics (FUZZ-IEEE), Taiwan

2010 **Guest Editor**, special issue on Recent Advances in Fuzzy Qualitative Reasoning, International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems (IJUFKS, World Scientific)

- Associate Editor, Pattern Recognition (Elsevier) since 2021
- Associate Editor, IEEE/CAA Journal of Automatica Sinica since 2018
- Board of Governors (Malaysia representative), International Association on Pattern Recognition (IAPR) since 2014.
- IEEE Senior Member, SMIEEE since 2013.

HONORS AND AWARDS

2023 **Faculty Exchange Fellowship**, University Alliance in Talent Education Development (UAiTED)
ASEAN Chartered Professional Engineer, Association of Southeast Asian Nations (ASEAN)

2022 **Top Research Scientists Malaysia**, Academy of Sciences Malaysia
Professional Engineer, Board of Engineers Malaysia
Who's Who in Engineering Malaysia, Board of Engineers Malaysia

2021 **Best Student Paper Award**, MIUA2021, Oxford, U.K.

2017 **Excellence Service Award**, University of Malaya, Malaysia

2016 **Silver Medal (Invention & Innovation Awards)**, Malaysia Technology Expo, Kuala Lumpur, Malaysia

2015 **Member**, Young Scientist Network – Academy of Sciences Malaysia
Chartered Engineer, Institute of Engineering and Technology, U.K.
Best Student Paper Nomination Award, FUZZ-IEEE 2015, Istanbul, Turkey

2014 **Visiting Associate Professor**, Tokyo Metropolitan University, Japan
Visiting Researcher, University of Reading, U.K.

2013 **Hitachi Fellowship**, Hitachi, Japan

2011 **Best Paper Award**, IVIC2011, Kuala Lumpur, Malaysia

2010 **IET Young Engineer Award**, Malaysia
Best Paper Award, ISSPA2010, Kuala Lumpur, Malaysia

2006 **Best Student Paper Award**, KES2006, Bournemouth, U.K.
British Top 100's Early Stage Research Engineer, U.K.

TEACHING EXPERIENCE

- Universiti Malaya – Faculty of Comp. Sci. and Info. Tech.
 - *Computer System and Organisation*, Sem I 2016, 2017 [graduate course]
 - *Computer Vision and Pattern Recognition*, Sem II 2015, 2016, 2017, 2018 [postgraduate]
 - *Data Structure*, Sem II 2019, 2020, 2022 [graduate course]
 - *Fuzzy Logic*, Sem I 2011, 2012, 2013, 2014, 2015, 2016, 2017 [graduate course]
 - *Image Processing*, Sem II 2012, 2013, 2014, 2019, 2020, 2022 [graduate course]
 - *Machine Learning*, Sem I, 2012, 2022 [graduate course]
 - *Neural Network*, Sem II 2011, 2020 [graduate course]

ADVISING *(only as Main Supervisor are listed)*

- Current graduate students
 - Ying Hua Tan - Ph.D.
 - Jian Han Lim – Ph.D.
 - Chun Chet Ng - Ph.D.
 - Gen Bing Liong - Ph.D.
 - Soon Chang Poh - Ph.D.
 - Shin Wei Lim – Masters
 - Zhong Ken Hew - Masters
 - Jia Wei Sii - Masters
 - Wan En Ng – Masters
- Former students
 - Yang Loong Chang - Ph.D. (2022)
 - Pang Ting - Ph.D. (2022)
 - Hamizah Miswan - Ph.D. (2022)
 - Nurul Japar - Ph.D. (2022)
 - Jia Huei Tan - Ph.D. (2022)
 - Jessica Wong - Ph.D. (2021)
 - Chee Kheng Chng – Masters (2019)
 - Yuen Peng Loh - Ph.D. (2019)
 - Sue Han Lee - Ph.D. (2018)
 - Ven Jyn Kok - Ph.D. (2016)
 - Ekta Vats - Ph.D. (2016)
 - Sze Ling Tan - Ph.D. (2015)
 - Anhar Risnumawan – Masters (2015)
 - Mei Kuan Lim - Ph.D. (2015)
 - Chern Hong Lim - Ph.D. (2015)
 - Wai Lam Hoo - Ph.D. (2015)
 - Chee Kau Lim - Ph.D. (2015)
 - Ishan Abeywardena – Ph.D. (2015)
 - Wei Ren Tan – Masters (2012)

SEMINAR SERIES AND INVITED TALKS

- 2023 **Keynote Speaker**, 6th International Conference on Multimedia Analysis and Pattern Recognition (MAPR), Quy Nhon, Vietnam
Keynote Speaker, 5th International Conference on Mathematical Science (ICMS5), Malaysia
- 2022 **Keynote Speaker**, ISPACS, Malaysia
- 2018 **Tutorial Speaker**, IEEE International Joint Conference on Artificial Intelligence (IJCAI), Stockholm, Sweden
- 2017 **Tutorial Speaker**, IEEE International Conference on Fuzzy Systems, Naples, Italy

- 2016 **TEDx Speaker**, Malaysia
Invited Speaker, Kyoto University, Japan
Tutorial Speaker, World Congress on Computational Intelligence,
Vancouver, Canada
- 2015 **Invited Speaker**, National University of Malaysia, Malaysia
Tutorial Speaker, IEEE International Conference on Fuzzy Systems,
Istanbul, Turkey
- 2014 **Invited Speaker**, National Laboratory of Pattern Recognition (NLPR),
Chinese Academic of Science, PR China
Invited Speaker, The International Workshop on Advanced
Computational Intelligence and Intelligent Informatics, Japan
- 2013 **Keynote Speaker**, Int. Seminar on Computer Vision, India
Invited Workshop Speaker, Health Informatics Research Workshop:
Towards Sustainable Healthcare, Swinburne University of Technology,
Sarawak Campus, Malaysia
- 2012 **Invited Speaker**, IET AGM (Malaysia Chapter)
- 2010 **Invited Speaker**, iFAN2010, Tokyo, Japan
Invited Speaker, Phillips Research Centre, Eindhoven, Netherlands

REFERENCE UPON REQUEST