

# CHEE SENG CHAN

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## PROFESSIONAL EXPERIENCE

<b>Dean</b> <i>Faculty of Comp. Sci., &amp; Info, Tech. Universiti Malaya, Malaysia.</i>	2024 - Present
<b>Professor</b> <i>Universiti Malaya, Malaysia.</i>	2022 - Present
<b>Under Secretary (Data Strategic and Foresight)</b> <i>Ministry of Science, Technology and Innovation (MOSTI), Malaysia.</i>	2020 - 2022
<b>Associate Professor</b> <i>Universiti Malaya, Malaysia.</i>	2017 - 2022
<b>Deputy Dean (Research &amp; Development)</b> <i>Faculty of Comp. Sci., &amp; Info, Tech. Universiti Malaya, Malaysia.</i>	2019 - 2020
<b>Head of Department (Artificial Intelligence)</b> <i>Faculty of Comp. Sci., &amp; Info, Tech. Universiti Malaya, Malaysia.</i>	2017 - 2019
<b>Senior Lecturer</b> <i>Universiti Malaya, Malaysia.</i>	2010 - 2017

## EDUCATION

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

## RESEARCH GRANTS

- Total secured: **3.8M MYR (~0.8M USD)** as individual Principal Investigator (PI)
- *On-going Projects (only as PI are listed)*
  - **Memosa@ Aicp: A Digital Health Platform for Early Detection of Oral Cancer (PV056-2023).** (MYR 487,000, 2022-2024) – Cancer Research Malaysia.
- *Completed Projects (only as PI are listed)*
  - **Intellectual Property Protection Of Deep Learning Model (ST041-2021).** (MYR 12,000; 2021-2023) – SATU Joint Research Scheme (JRS), Taiwan
  - **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)**

My advised student(s) is(are) underlined, my name in **bold**.

- Citations: 7272, h-Index: 40 (from [Google Scholar](https://scholar.google.com/citations?user=...), 01.02.2024)
- **13** premium journal articles (TPAMI, TIP, TMM, PR, TFS)
- **3** Tier 1 Computer Vision conference proceedings (CVPR)
- **3** Tier 1 Machine Learning conference proceedings (NeurIPS, IJCAI)

## **Journal Articles**

- J.54** Ng, C.C., Lin, C.T., Tan, Z.Q., Wang, X., Kew, J.L., **Chan, C.S.**, and Zach, C. (2024). “When IC meets Text: Towards A Rich Annotated Integrated Circuit Text Dataset”, *Pattern Recognition (PR)*, vol. 147, p.110124.

- J.53** Liong, G.B., Liong, S.T., **Chan, C.S.**, and See, J. (2024) “SFAMNet: A Scene Flow Attention-based Micro-expression Network”, *Neurocomputing*, vol. 566, pp. 126998.
- J.52** Lim, J.H. and **Chan, C.S.** (2023). “Mask-guided Network for Image Captioning”, *Pattern Recognition Letters (PRL)*, vol. 173, pp. 79-86.
- J.51** 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 (PR)*, vol. 138, p.109416.
- J.50** 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.
- J.49** 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 (SP:IC)*, vol. 110, pp. 116875.
- J.48** 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 (TPAMI)*, vol. 44(10), pp. 6122-6139.
- J.47** 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.
- J.46** Tan, J.H., **Chan, C.S.**, and Chuah, J.H. (2022) “End-to-End Supermask Pruning: Learning to Prune Image Captioning Models”, *Pattern Recognition (PR)*, vol. 122, pp. 108366.
- J.45** 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 (PR)*, vol. 122, pp. 108285.
- J.44** Japar, N., Kok, V.J. and **Chan, C.S.** (2021) “Collectiveness Analysis with Visual Attributes”, *Neurocomputing*, vol. 463, pp. 77-90.
- J.43** 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.
- J.42** Japar, N., Kok, V.J. and **Chan, C.S.** (2021) “Coherent Group Detection in Still Image”, *Multimedia Tools and Applications (MTAP)*, vol. 80, pp. 22007-22026.

- J.41** Chang, Y.L., **Chan, C.S.** and Remagnino, P. (2021) “Action Recognition on Continuous Video”, *Neural Computing and Applications (NCA)*, vol. 33(4), pp. 1233-1243.
- J.40** 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.
- J.39** 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 (IJДАР)*, vol. 23, pp. 31-52.
- J.38** Tan, J.H., **Chan, C.S.** and Chuah, J.H. (2019) “COMIC: Compact Image Captioning with Attention”, *IEEE Transactions on Multimedia (TMM)*, vol. 21(10), pp. 2668-2696.
- J.37** Loh, Y.P., X. Liang and **Chan, C.S.** (2019) “Low-light image enhancement using Gaussian Process for features retrieval”, *Signal Processing: Image Communication (SP:IC)*, vol. 74, pp. 175-190.
- J.36** Tan, Y.H. and **Chan, C.S.** (2019) “Phrase-based Image Caption Generator with Hierarchical LSTM Network” *Neurocomputing*, vol. 333, pp. 86-100.
- J.35** Loh, Y.P. and **Chan, C.S.** (2019) “Getting to Know Low-light Images with The Exclusively Dark Dataset”, *Computer Vision and Image Understanding (CVIU)*, vol. 178, pp. 30-42.
- J.34** 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 (TIP)*, vol. 28(1), pp. 394-409.
- J.33** Kok, V.J. and **Chan, C.S.** (2018) “Granular-based Dense Crowd Density Estimation”, *Multimedia Tools and Applications (MTAP)*, vol. 77(15), pp. 20227-20246.
- J.32** 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 (TIP)*, vol. 27(9), pp. 4287-4301.
- J.31** 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 (FSS)*, vol. 331, pp. 47-67.
- J.30** 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 (PR)*, vol. 71, pp. 1-13.

- J.29** Tan, W.R., **Chan, C.S.**, Aguirre, H.E. and Tanaka, K. (2017) “Fuzzy Qualitative Deep Compression Network”, *Neurocomputing*, vol. 251, pp. 1-15.
- J.28** Kok, V.J. and **Chan, C.S.** (2017) “GrCS: Granular Computing based Crowd Segmentation”, *IEEE Transactions on Cybernetics (TCy)*, vol. 47(5), pp. 1157-1168.
- J.27** 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 (TFS)*, vol. 25(1), pp. 218-236.
- J.26** Lim, C.H. and **Chan, C.S.** (2016) “Fuzzy Qualitative Human Model for Viewpoint Identification”, *Neural Computing and Applications (NCA)*, vol. 27(4), pp. 845-856.
- J.25** Vats, E. and **Chan, C.S.** (2016). “Early Detection of Human Actions – A Hybrid Approach”, *Applied Soft Computing*, vol. 46, pp. 953-966.
- J.24** 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.
- J.23** Tang, S. and **Chan, C.S.** (2016) “Orthogonal Planar Search (OPS) for Coronary Artery Centerline Extraction”, *Signal, Image and Video Processing (SVIP)*, vol. 10(2), pp. 335-342.
- J.22** 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 (JIFS)*, vol. 29 (5), pp. 1923-1931.
- J.21** Hoo, W.L. and **Chan, C.S.** (2015) “Recognizing Unknown Objects with Attributes Relationship Model”, *Expert Systems with Application (ESWA)*, vol. 42 (23), pp. 9279-9283.
- J.20** Hoo, W.L. and **Chan, C.S.** (2015) “Zero-shot Object Recognition System based on Topic Model”, *IEEE Transactions on Human-Machine Systems (THMS)*, vol. 45(4), pp. 518-525
- J.19** 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 (ESWA)*, vol. 42 (9), pp. 4540-4555.
- J.18** Lim, C.H., Vats, E. and **Chan, C.S.** (2015) “Fuzzy Human Motion Analysis: A Review”, *Pattern Recognition (PR)*, vol. 48 (5), pp. 1773-1796.

- J.17** 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.
- J.16** Hoo, W.L. and **Chan, C.S.** (2015) “Keybook: Unbias Object Recognition using Keywords”, *Expert Systems with Application (ESWA)*, vol. 42 (8), pp. 3991-3999.
- J.15** 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.
- J.14** Lim, C.K. and **Chan, C.S.** (2015) “A Weighted Inference Engine based on Interval-valued Fuzzy Relational Theory”, *Expert Systems with Application (ESWA)*, vol. 42 (7), pp. 3410-3419.
- J.13** Lee, H.Y., Hoo, W.L. and **Chan, C.S.** (2015) “Color Video Denoising using Epitome and Sparse Coding”, *Expert Systems with Application (ESWA)*, vol. 42 (2), pp. 751-759.
- J.12** 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 (ESWA)*, vol. 41 (18), pp. 8027-8048.
- J.11** 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 (TFS)*, vol. 22 (6), pp. 1541-1556.
- J.10** 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.
- J.9** 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.
- J.8** 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.
- J.7** Lim, M.K., Tang, S. and **Chan, C.S.** (2014) “iSurveillance: Intelligent framework for Multiple Events Detection in Surveillance Videos”, *Expert Systems with Applications (ESWA)*, vol. 41 (10), pp. 4704-4715.

- J.6** 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.
- J.5** 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 (TII)*, vol. 8(1), pp. 138-147.
- J.4** 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 (IJFS)*, vol. 13(4), pp. 237-245.
- J.3** **Chan, C.S.** and Liu, H. (2009) “Fuzzy Qualitative Human Motion Analysis” *IEEE Transactions on Fuzzy Systems (TFS)*, vol. 17(4), pp. 851-862.
- J.2** **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.
- J.1** **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 Proceedings

- C.52** Hoe, J.T., Jiang, X., **Chan, C.S.**, Tan, Y.P. and Hu, W. “InteractDiffusion: Interaction-Control for Text-to-Image Diffusion Model”, *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, June, 2024.
- C.51** Ng, K.W., Zhu, X., Hoe, J.T., **Chan, C.S.**, Zhang, T., Song, Y.Z., and Xiang, T. “Unsupervised Hashing with Similarity Distribution Calibration”, *34<sup>th</sup> British Machine Vision Conference (BMVC)*, Aberdeen, U.K., November, 2023.  
(oral, acceptance rate = 7.5%)
- C.50** Ooi, X.P. and **Chan, C.S.** “LLDE: Enhancing Low-light Images with Diffusion Model”, *IEEE International Conference on Image Processing (ICIP)*, Kuala Lumpur, Malaysia, October 2023.
- C.49** Nah, W.J., Ng, C.C., Lin, C.T., Lee, Y.K., Kew, J.L., Tan, Z.Q., **Chan, C.S.**, Zach, C. and Lai, S.H. “Rethinking Long-tailed Visual Recognition with Dynamic Probability Smoothing and Frequency Weighted Focusing”, *IEEE International Conference on Image Processing (ICIP)*, Kuala Lumpur, Malaysia, October 2023.



- C.48 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%)
- C.47 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.
- C.46 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.
- C.45 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.
- C.44 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.
- C.43 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.
- C.42 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.
- C.41 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)
- C.40 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.

- C.39 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)
- C.38 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.
- C.37 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.
- C.36 Lim, J.H. and **Chan, C.S.** “Mask Captioning Network”, *IEEE International Conference on Image Captioning (ICIP)*, Taipei, Taiwan, Sept. 2019.
- C.35 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.
- C.34 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.
- C.33 Chng, C.K. and **Chan, C.S.** “Total-Text: A Comprehensive Dataset for Scene Text Detection and Recognition”, *14<sup>th</sup> IAPR International Conference on Document Analysis and Recognition (ICDAR)*, Kyoto, Japan, Nov., 2017.
- C.32 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.
- C.31 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.
- C.30 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.
- C.29 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.

- C.28 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.
- C.27 Jhawar 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.
- C.26 Loh, Y.P., and **Chan, C.S.** “Unveiling Contrast in Darkness”, *3<sup>rd</sup> Asian Conference on Pattern Recognition (ACPR)*, Kuala Lumpur, Malaysia, Nov., 2015.
- C.25 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.
- C.24 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.
- C.23 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)
- C.22 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.
- C.21 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.
- C.20 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.
- C.19 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.

- C.18 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.*
- C.17 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), Hydeberad, India, July, 2013.*
- C.16 Vats, E., Jhawar, 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), Hydeberad, India, July, 2013.*
- C.15 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), Hydeberad, India, July, 2013.*
- C.14 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.*
- C.13 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.*
- C.12 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.*
- C.11 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.*
- C.10 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)
- C.9 **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.*
- C.8 Kiran, M., Teng, S.L., **Chan, C.S.** and Lai, W.K. “Human Posture Classification using Hybrid Particle Swarm Optimisation” *Proceedings of the 10<sup>th</sup> International Conference on Information Sciences, Signal Processing and their applications (ISSPA), Kuala Lumpur, Malaysia, 2010, pp. 778-781.*  
(Best Paper Award)

- C.7 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.
- C.6 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.
- C.5 **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.
- C.4 **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.
- C.3 **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.
- C.2 **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.
- C.1 **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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|------|--|
| 2024 | <b>Technical Program Chair</b> , International Conference on Digital Image Computing; Techniques and Applications (DICTA), Australia   |
| 2022 | <b>Local Arrangement Chair</b> , 16 <sup>th</sup> Asian Conference on Computer Vision (ACCV), Macau SAR, China<br><b>Award Chair</b> , International Symposium on Intelligence Signal Processing and Communication Systems (ISPACS), Penang, Malaysia  |
| 2021 | <b>Brave New Ideas Chair</b> , ACM Multimedia Asia (ACM-MMAAsia), Gold Coast, Australia<br><b>Competition Organizer</b> , RRC-Integrated Circuit Text Spotting and Aesthetic Assessment, 16 <sup>th</sup> International Conference on Document Analysis and Recognition (ICDAR), Lausanne, Switzerland |

- 2020      **General Chair**, 13<sup>th</sup> International Conference on Intelligent Robotics and Applications (ICIRA), Kuala Lumpur, Malaysia
- 2019      **General Chair**, IEEE 21<sup>st</sup> 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, Signal Processing: Image Communication (Elsevier)
- 2017      **Finance co-chair**, 9<sup>th</sup> 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, Journal of Applied Remote Sensing (JARS, SPIE)
- 2016      **Chapter Chair**, IEEE Computational Intelligence Society (IEEE-CIS), Malaysia  
**Honorary Treasurer**, Institute of Engineering and Technology, IET (Malaysia)  
**Regional Chair**, 7<sup>th</sup> International Conference on Imaging for Crime Detection and Prevention (ICDP), Spain  
**Publication Chair**, 8<sup>th</sup> 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 3<sup>rd</sup> 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**, 19<sup>th</sup> Asia Pacific Symposium on Intelligent and Evolutionary Systems (IES), Thailand  
**Regional Chair**, 6<sup>th</sup> 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**, 22<sup>nd</sup> 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**, 5<sup>th</sup> 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.
  - **Research Methodology**, Sem 1, 2023 [postgraduate]
  - **Computer Vision and Pattern Recognition**, Sem II 2015, 2016, 2017, 2018 [postgraduate]
  - **Computer System and Organisation**, Sem I 2016, 2017 [graduate course]
  - **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)*

- Total Graduated: **17 Ph.D** and **5 Master by Research** as main supervisor
- Current graduate students
 

<ul style="list-style-type: none"> <li>• Ying Hua Tan - Ph.D.</li> <li>• Chun Chet Ng - Ph.D.</li> <li>• Gen Bing Liong - Ph.D.</li> <li>• Soon Chang Poh - Ph.D.</li> <li>• Zhong Ken Hew – Masters</li> </ul>	<ul style="list-style-type: none"> <li>• Jia Wei Sii - Masters</li> <li>• Wan En Ng - Masters</li> <li>• Hong Xi Tae - Masters</li> <li>• Win Kent Ong - Masters</li> </ul>
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- Former students
 

<ul style="list-style-type: none"> <li>• Shin Wei Lim - Masters (2024)</li> <li>• Jian Han Lim - Ph.D. (2023)</li> </ul>	<ul style="list-style-type: none"> <li>• Yang Loong Chang - Ph.D. (2022)</li> <li>• Pang Ting - Ph.D. (2022)</li> </ul>
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- Hamizah Miswan - Ph.D. (2022)
- Yu-Quan Lim - Masters (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 | <b>Workshop Speaker, MM ASIA</b><br><b>Keynote Speaker, 6th International Conference on Multimedia Analysis and Pattern Recognition (MAPR), Quy Nhon, Vietnam</b><br><b>Keynote Speaker, 5th International Conference on Mathematical Science (ICMS5), Malaysia</b> |
| 2022 | <b>Keynote Speaker, ISPACS, Malaysia</b>  |
| 2018 | <b>Tutorial Speaker, IEEE International Joint Conference on Artificial Intelligence (IJCAI), Stockholm, Sweden</b>  |
| 2017 | <b>Tutorial Speaker, IEEE International Conference on Fuzzy Systems, Naples, Italy</b>  |
| 2016 | <b>TEDx Speaker, Malaysia</b><br><b>Invited Speaker, Kyoto University, Japan</b><br><b>Tutorial Speaker, World Congress on Computational Intelligence, Vancouver, Canada</b>  |
| 2015 | <b>Invited Speaker, National University of Malaysia, Malaysia</b><br><b>Tutorial Speaker, IEEE International Conference on Fuzzy Systems, Istanbul, Turkey</b>  |
| 2014 | <b>Invited Speaker, National Laboratory of Pattern Recognition (NLPR), Chinese Academic of Science, PR China</b><br><b>Invited Speaker, The International Workshop on Advanced Computational Intelligence and Intelligent Informatics, Japan</b>                    |
| 2013 | <b>Keynote Speaker, Int. Seminar on Computer Vision, India</b><br><b>Invited Workshop Speaker, Health Informatics Research Workshop: Towards Sustainable Healthcare, Swinburne University of Technology, Sarawak Campus, Malaysia</b>                               |
| 2012 | <b>Invited Speaker, IET AGM (Malaysia Chapter)</b>  |

2010

**Invited Speaker**, iFAN2010, Tokyo, Japan

**Invited Speaker**, Phillips Research Centre, Eindhoven, Netherlands

**REFERENCE UPON REQUEST**