CHEE SENG CHAN
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Dept. of Artificial Intelligence
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Universiti Malaya
50603 Kuala Lumpur

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PROFESSIONAL EXPERIENCE

Professor
Universiti Malaya, Malaysia.
2022 - Present

Under Secretary (Data Strategic and Foresight)
Ministry of Science, Technology and Innovation (MOSTI),
Malaysia.
2020 - 2022

Associate Professor
Universiti Malaya, Malaysia.
2017 - 2022

Deputy Dean (Research & Development)
Faculty of Comp. Sci., & Info, Tech. Universiti Malaya,
Malaysia.
2019 - 2020

Head of Department (Artificial Intelligence)
Faculty of Comp. Sci., & Info, Tech. Universiti Malaya,
Malaysia.
2017 - 2019

Senior Lecturer
Universiti Malaya, Malaysia.
2010 - 2017

EDUCATION

Doctor of Philosophy (Ph.D.)
University of Portsmouth, Portsmouth, U.K.
Thesis: Fuzzy Qualitative Human Motion Analysis
2008

M.Sc. Communication Systems Engineering
University of Portsmouth, Portsmouth, U.K.
Thesis: GPS-SMS Vehicle Tracking System
2005

B.Eng. (Hons) Electronics Engineering
Multimedia University, Malaysia
2003

RESEARCH GRANTS

o Total secured: **4.0M MYR (~0.9M USD)** as individual Principal Investigator (PI)

o *On-going Projects (only as PI are listed)*

- **Delving into Secure Federated Unlearning: Exploring Gradient Dropping Strategies for Decentralized Knowledge Removal (FP060-2014).** (MYR 114,800; 2024-2027) - Fundamental Research Grant Scheme (FRGS), Ministry of Higher Education, Malaysia.

- **Memosa@ Aicp: A Digital Health Platform for Early Detection of Oral Cancer (PV056-2023).** (MYR 487,000, 2022-2024) – Cancer Research Malaysia.

o *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, 01.02.2024)

- **13** premium journal articles (TPAMI, TIP, TMM, PR, TFS)
  3 Tier 1 Computer Vision conference proceedings (CVPR)
  4 Tier 1 Machine Learning conference proceedings (NeurIPS, IJCAI)
  1 Tier 1 Natural Language Processing finding proceedings (EMNLP)

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 (IJDAR), 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 <u>Lee, S.H.</u>, **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 <u>Tan, W.R.</u>, **Chan, C.S.**, Aguirre, H.E. and Tanaka, K. (2017) "Fuzzy Qualitative Deep Compression Network", *Neurocomputing, vol. 251, pp. 1-15.*

J.28 <u>Kok, V.J.</u> and **Chan, C.S.** (2017) "GrCS: Granular Computing based Crowd Segmentation", *IEEE Transactions on Cybernetics (TCy), vol. 47(5), pp. 1157-1168.*

J.27 <u>Ahmadian, A.</u>, 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 <u>Lim, C.H.</u> 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 <u>Vats, E.</u> and **Chan, C.S.** (2016). "Early Detection of Human Actions – A Hybrid Approach", *Applied Soft Computing, vol. 46, pp. 953-966.*

J.24 <u>Kok, V.J.</u>, <u>Lim, M.K.</u> and **Chan, C.S.** (2016) "Crowd Behaviour Analysis: A Review where Physics meets Biology", *Neurocomputing, vol. 177, pp. 342-362.*

J.23 <u>Tang, S.</u> 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 <u>Vats, E.</u>, <u>Lim, C.K.</u> 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 <u>Hoo, W.L.</u> 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 <u>Hoo, W.L.</u> 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 <u>Lim, M.K.</u>, 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 <u>Lim, M.K.</u>, **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 <u>Tan, W.R.</u>, **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 <u>Lim, C.K.</u> 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 <u>Hoe, J.T.</u>, 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., <u>Hoe, J.T.</u>, **Chan, C.S.**, Zhang, T., Song, Y.Z., and Xiang, T. "Unsupervised Hashing with Similarity Distribution Calibration", *34th British Machine Vision Conference (BMVC)*, Aberdeen, U.K., November, 2023.
(oral, acceptance rate = 7.5%)

C.50 <u>Ooi, X.P.</u> 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 <u>Nah, W.J.</u>, <u>Ng, C.C.</u>, Lin, C.T., Lee, Y.K., <u>Kew, J.L.</u>, <u>Tan, Z.Q.</u>, **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", *14th 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 <u>Tan, Y.H.</u> 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 <u>Tan, W.R.</u>, **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 <u>Jhawar A.</u>, **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 <u>Loh, Y.P.</u>, and **Chan, C.S.** "Unveiling Contrast in Darkness", *3rd Asian Conference on Pattern Recognition (ACPR), Kuala Lumpur, Malaysia, Nov., 2015.*

C.25 <u>Lee, S.H.</u>, **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., <u>Ahmadian, A.</u>, **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 <u>Vats, E.</u>, <u>Lim, C.K.</u> 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 <u>Risnumawan, A.</u> 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 <u>Lim, M.K.</u>, <u>Kok, V.J.</u>, 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 <u>Hoo, W.L.</u>, 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., Prabuwono, 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 10ᵗʰ 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

2024 **Technical Program Chair**, International Conference on Digital Image Computing; Techniques and Applications (DICTA), Australia

2022 **Local Arrangement Chair**, 16ᵗʰ 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-MMAsia), Gold Coast, Australia
	Competition Organizer, RRC-Integrated Circuit Text Spotting and Aesthetic Assessment, 16th International Conference on Document Analysis and Recognition (ICDAR), Lausanne, Switzerland
2020	**General Chair**, 13th International Conference on Intelligent Robotics and Applications (ICIRA), Kuala Lumpur, Malaysia
2019	**General Chair**, IEEE 21st 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**, 9th 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, 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.
  - *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
  - Ying Hua Tan - Ph.D.
  - Chun Chet Ng - Ph.D.
  - Gen Bing Liong - Ph.D.
  - Soon Chang Poh - Ph.D.
  - Zhong Ken Hew – Masters
  - Jia Wei Sii - Masters
  - Wan En Ng - Masters

- Hong Xi Tae - Masters
- Win Kent Ong - Masters
- Former students
  - Shin Wei Lim - Masters (2024)
  - Jian Han Lim - Ph.D. (2023)
  - Yang Loong Chang - Ph.D. (2022)
  - Pang Ting - Ph.D. (2022)
  - 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   **Workshop Speaker, MM ASIA**
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