

Huang Zhiyong

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Education

- PhD of Computer Science, EPFL, Switzerland, 1997
- MEng of Computer Engineering, Tsinghua University, China, 1988
- BEng of Computer Engineering, Tsinghua University, China, 1986

Experiences

- 2017-Present, Associate Professor, Department of Computer Science, School of Computing, NUS
 - Director, C-TReND, Computing Translational Research and Development, School of Computing, NUS, 2017-2025
 - Assistant Dean, Industry Relations, School of Computing, NUS, 2019-2025
- 2013-2017 Senior Scientist, Robotics, I²R
 - Senior Manager, Industry Development, I²R
 - Strategic Planning Manager, Robotics, I²R
- 2007-2017 Adjunct Associate Professor, Department of Computer Science, School of Computing, NUS
- 2007-2013 Department Head, Computer Graphics and Interface, I²R
- 2003-2006 Associate Faculty Member, Singapore-MIT Alliance
- 1997-2006 Assistant Professor, Department of Computer Science, School of Computing, NUS
- 1992-1997 Research Assistant, Computer Graphics Lab, EPFL, Switzerland
- 1988-1992 Lecturer, Department of Computer Science and Technology, Tsinghua University, Beijing, China

Projects and research grants

1. PI, AI + Neuroscience, NUS AI Institute, May 2025-Apr 2027.
2. PI, NUS Digital Twin for Research and Services, MOE Tier-1 project, July 2022-June 2025
3. Co-PI, Capsule Endoscopy SI-Aided Diagnosis, AI SG 100E, Jan 2020- Jul 2021
4. Co-PI, Development of a Knowledge and Data-driven Satellite DEM Improvement Technique, AI SG 100E, Feb 2020- Aug 2021
5. PI, Super Resolution of Images, Smiths Detection, 2020-2021
6. PI, AI-based Automatic Classification of Crowdsourced Images, 2019-2021
7. PI, A Blockchain-based Asset Tracking and Rights Management System for Additive Manufacturing Production Workflow, NAMIC, 2018-2019
8. PI, Deep Learning for Recommender Systems, AISG, 2018-2019
9. Co-PI, Robot Application Development and Operating Environment (RODOE), SERC Industry Robotics Programme, A*STAR, September 2015-August 2017
10. Co-PI, Robot Application Development and Operating Environment, A*STAR Robotic Programme, September 2013 – August 2016
11. Co-PI, Robot Assisted Shelf Reading project, April 2014-March 2015
12. SERC Human Factor Engineering, A*STAR, August 2013- July 2014
13. PI, I²R iModel CORE project, April 2012 – March 2014
14. Co-PI, Graphics Joint Lab, I²R-SoC, NUS, April 2010 – July 2013
15. PI, I²R ISGE project, P3DES, April 2007 – March 2010
16. Co-PI, A*STAR SpADE: a Spatio-temporal Autonomic Database Engine for location-based services, School of Computing, NUS, April 2005 – December 2006
17. PI, Stochastic Paintbrush Image Transformation, School of Computing, NUS, November 2000 – February 2005
18. Co-PI, Watermarking of 3D Volume Data, School of Computing, NUS, May 2001 – April 2003
19. PI, Reconstruction of 3-D Objects from Video Sequences, School of Computing, NUS, November 1998 – June 2002

Patent licensing

- Ong EP, Nguyen HT, Niswar A, Huang Z, Rahardja S, Tng TH, 3D face modeling technology, TLA/20120228/045, ETPL, A*STAR.

Granted patents

- Li R, Tan B H, Huang Z., Yau W Y, Mobile Manipulator And Method Of Controlling The Mobile Manipulator For Tracking A Surface, USA Patent No. 10,618,171 B2, Grant Date: 14 Apr 2020.
- Li R, Tan B H, Huang Z., Yau W Y, High Accuracy Trajectory Tracking Method for Mobile Robot Manipulator Systems , Primary, Singapore, 2015.
- Ong EP, Nguyen HT, Niswar A, Huang Z, Rahardja S, A method of 3D face synthesis; and a system thereof , Primary, Singapore 2015.
- Leow W. K., Huang Z., Zhou L., and Atmosukarto I., Frontier Advancing Polygonization. US 7,091,969, granted 15 Aug 2006.
- Huang Z, Tan T S, Wong T W, Li X, Method and apparatus for generating atomic parts of graphic representation through skeletonization for interactive visualization applications, United States Patents, 6,825,839, granted 30 Nov 2004.

Patent application publication

- Li R, Tan B H, Huang Z., Yau W Y, Mobile Manipulator and Method of Controlling the mobile Manipulator for Tracking a Surface, US2018/0001479 A1, Jan 4, 2018.

Recent papers

AI

1. Ren X., Jiang P., Li K., Huang Z., Du X., Jiang J., Xing Z., Sun J., and Zhuo Y. Terry, HackWorld: Evaluating Computer-Use Agents on Exploiting Web Application Vulnerabilities, ICLR 2026.
2. Ma M., Liu R., Lin Y., Huang Z., and Dong J. S., TrainRef: Curating Data with Label Distribution and Minimal Reference for Accurate Prediction and Reliable Confidence, ICLR 2026.
3. Ang Y., Wang Q., Huang Q., Bao Y., Xi X., Tung A. K. H., Chen J., and Huang Z., CTBench: Cryptocurrency Time Series Generation Benchmark, ICLR 2026.
4. Ang Y., Bao Y., Huang Q., Wang Q., Xi X., Lu S., Tung A. K. H., and Huang Z., CMS-VAE: A Strategy-aware Variational AutoEncoder for High-Fidelity Crypto Market Simulation, the 6th ACM International Conference on AI in Finance, ICAIF 2025.
5. Ang Y., Wang Q., Huang Q., Bao Y., Xi X., Tung A. K. H., Chen J., and Huang Z., CTBench: Cryptocurrency Time Series Generation Benchmark, NeurIPS 2025 Workshop: Generative AI in Finance.
6. Ang Y., Bao Y., Huang Q., Wang Q., Xi X., Lu S., Tung A. K. H., Huang Z., CMS-VAE: A Strategy-aware Variational AutoEncoder for High-Fidelity Crypto Market Simulation, NeurIPS 2025 Workshop: Generative AI in Finance.
7. Chen Z., Lin H., Li K., Luo Z., Ye Z., Chen G., Huang Z., Ma J., AdamMeme: Adaptively Probe the Reasoning Capacity of Multimodal Large Language Models on Meme Harmfulness, ACL 2025 Main.
8. Song L., Chen X., Huang Z., Du B., A trained Physics-Informed Neural Networks(PINNs) method for phase-field model in Allen-Cahn framework, AI4X 2025.
9. Li K., Tian Y., Hu Q., Luo Z., Huang Z., Ma J., MMCode: Benchmarking Multimodal Large Language Models in Code Generation with Visually Rich Programming Problems, ICLR 2025 Workshop LLM Reasoning and Plan.
10. Li K., Meng Z., Lin H., Luo Z., Tian Y., Ma J., Huang Z., Chua TS, Screen Spot-Pro: GUI Grounding for Professional High-Resolution Computer Use, ICLR 2025 Workshop LLM Reasoning and Plan.
11. Song L., Huang Z., Chen X., Machine learning-based Optimization for Molten pool Dynamics in Laser Manufacturing, ICLR 2025 Workshop XAI4Science.
12. Li K., Meng Z., Lin H., Luo Z., Tian Y., Ma J., Huang Z., Chua T.S., ScreenSpot-Pro: GUI Grounding for Professional High-Resolution Computer Use, ACM MM 2025 (Oral).
13. Yan M., Yu Y., Zhang R., Liu Z., Zhang R., Ren Y., Lu K., Huang Z., Luo F., Cai Z., DeepMolTex: Deep Alignment of Molecular Graphs with Large Language Models via Mixture of Modality Experts, ACM MM 2025.
14. Zhai Y., Zeng Y., Huang Z., Qin Z., Jin X., Cao D., Multi-Prompts Learning with Cross-Model Alignment for Attribute-based Person Re-Identification, AAAI 2024.
15. Wang M., Chen J., Zhang X., Huang Z., Rahardja S., Multi-modal speech enhancement with bone-conducted speech in time domain , Applied Acoustics, Volume 200, November 2022, 109058.
16. Chen J., Wang M., Zhang X.L., Huang Z., and Rahardja S., End-to-end multi-modal speech recognition with air and bone conducted speech, IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2022.

Computer Vision

1. Cao X., Lin B., Wang B., Huang Z., Tan Robby T., 3D-OTT: Texture Transfer for 3D Objects from a

Single Reference Image, NeurIPS 2025.

2. Cao X., Zhao Y., Tan Robby T., Huang Z., Bridging 3D Editing and Geometry-Consistent Paired Dataset Creation for 2D Nighttime-to-Daytime Translation, CVPR 2025 Workshop SyntaGen.
3. Dai Y., Huang Z., Huang W., TA-MIR: Text Aggregation for Multimodal Feature Representation in Medical Image Registration, ISBI 2025.
4. Cao X., Lin B., Wang B., Huang Z., Tan Robby T., SSNeRF: Sparse View Semi-supervised Neural Radiance Fields with Augmentation, BMVC 2025.
5. Zhang H., Huang W., Huang Z., Zhang B., A Kernel Autoassociator Approach to Pattern Classification , IEEE Transaction on Systems, Man, and Cybernetics- Part B: Cybernetics, IEEE CS, Vol. 35, No. 3, June 2005. pp. 593-606.
6. Zhang H., Huang W., Huang Z., Li L., Affine Object Tracking with Kernel-based Spatial-Color Representation , IEEE Conf. on Computer Vision and Pattern Recognition CVPR 2005, I, pp. 293-300.
7. Yu M., Atmosukarto I., Leow W. K., Huang Z., Xu R.. 3D Model Retrieval With Morphing-Based Geometric and Topological Feature Maps. In Proc. IEEE Conf. on Computer Vision and Pattern Recognition, CVPR 2003, II 656-661.

NLP

1. Chen Z., Lin H., Li K., Luo Z., Ye Z., Chen G., Huang Z., Ma J., AdamMeme: Adaptively Probe the Reasoning Capacity of Multimodal Large Language Models on Meme Harmfulness, ACL 2025 Main.
2. Ai X and Huang Z., Zero-shot Cross-lingual Alignment for Embedding Initialization. ACL 2024 Findings.
3. Li K., Tian Y., Hu Q., Luo Z., Huang Z., Ma J., MMCode: Benchmarking Multimodal Large Language Models for Code Generation with Visually Rich Programming Problems, EMNLP 2024.

Database

1. Gao H., Cai S, Dinh TTA, Huang Z., Ooi BC, CtxPipe: Context-aware Data Preparation Pipeline Construction for Machine Learning , Proceedings of the ACM on Management of Data (SIGMOD) 2 (6), 1-27, 20 Dec 2024.
2. Ang Y., Huang Q., Bao Y., Tung A. K. H., Huang Z., TSGBench: Time Series Generation Benchmark, VLDB 2024 Best Paper Award Nomination.
3. Ang Y., Huang Q., Tung Anthony K. H., Huang Z., EADS: An Early Anomaly Detection System for Sensor-based Multivariate Time Series. Demo, ICDE 2024.
4. Gao H., Yue C., Dinh A., Huang Z., Ooi B.C., Enabling Secure and Efficient Data Analytics Pipeline Evolution with Trusted Execution Environment. VLDB 2023.
5. Ang Y., Huang Q., Tung A. K. H., Huang Z., A Stitch in Time Saves Nine: Enabling Early Anomaly Detection with Correlation Analysis, ICDE 2023.
6. Ooi B. C., Huang Z., Lin D., Lu H., Xu L., Adapting Relational Database Engine to Accommodate Moving Objects in SpADE. ICDE 2007: 1505-1506.
7. Guo S., Huang Z., Jagadish H. V., Ooi B. C. and Zhang Z., Relaxed Space Bounding for Moving Objects: A Case for the Buddy Tree , SIGMOD Record, 35, no. 4 (December 2006): 24-29.
8. Goh C.L., Shu Y., Huang Z., Ooi B. C., Dynamic Buffer Management with Extensible Replacement Policies , VLDB Journal (2006), 15(2):99-120.
9. Huang Z., Jensen C. S., Lu H., and Ooi B. C., Skyline queries against mobile lightweight devices in MANETs, The 22nd International Conference on Data Engineering (ICDE 2006):66.
10. Shou L., Huang Z., Tan K.-L., The Hierarchical Degree-of-Visibility Tree , IEEE Transactions on Knowledge and Data Engineering, IEEE CS, Vol. 16, No. 11, Nov. 2004, pp. 1357-1369.
11. Shou L., Huang Z. and Tan K.-L., HDov-tree: The Structure, The Storage, The Speed , THE 19th International Conference on Data Engineering (ICDE 2003), pp. 557-568.
12. Shou L., Chionh C. H., Huang Z., Ruan Y., and Tan K.-L. Walking Through A Very Large Virtual Environment In Real-time. VLDB 2001, pp. 401-410.

Software Engineering

1. Gao H., Ta Q. T., Dinh TTA, Ho N. M., Huang Z., Ooi BC, NB2P: Generating Data Science Pipelines from Computational Notebooks, the IEEE/ACM International Conference on Software Engineering, ICSE 2026.
2. Liu C. Y., Lin Y., Huang Y., Chang J., Qi B., Jiang B., Huang Z., and Dong J. S., Learning Project-wise Subsequent Code Edits via Interleaving Neural-based Induction and Tool-based Deduction, the 40th IEEE/ACM Automated Software Engineering Conference (ASE 2025).

3. Huang Y. H., Liu C. Y., Lin Y., Cai Y. F., Jiang B., Yang P., Huang Z., and Dong J. S., CoEdPilot: Interactively Recommending Project-Wise Code Edits, *Journal of Computer Science and Technology* (2025).
4. Teoh X., Lin Y., Liu R., Huang Z., Dong J. S., PhishDecloaker: Detecting CAPTCHA-cloaked Phishing Websites via Hybrid Vision-based Interactive Models, *USENIX Security 2024*.
5. Liu R., Lin Y., Teoh X., Liu G., Huang Z., Dong J. S., Less Defined Knowledge and More True Alarms: Reference-based Phishing Detection without a Pre-defined Reference List, *USENIX Security 2024*.

Computer Graphics

1. Gao M.C., Thanh T C., Nanjappa A., Tan S T., Huang Z.: gHull: A GPU algorithm for 3D convex hull. *ACM Trans. Math. Softw.* 40(1): 3 (2013).
2. Gao M.C., Thanh T C., Tan S T., Huang Z., Flip-Flop: Convex Hull Construction via Star-Shaped Polyhedron in 3D, *ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (i3D)*, 2013.
3. Gupta R., Chia A. Y. S. Rajan D., Ng E.S., Huang Z., Image Colorization Using Similar Images, *20th ACM international conference on Multimedia, ACM MM 2012*, pp. 369-378.
4. Gao, M., Cao, T.T., Tan, T.S., Huang, Z., gHull: A Three-dimensional Convex Hull Algorithm for Graphics Hardware, *i3D 2011 Poster*.
5. Chang E.-C., Mohan S. Kankanhalli, Guan X., Huang Z., Wu Y., Robust Image Authentication Using Content-based Compression, *ACM Multimedia Systems Journal*, Vol. 9, No. 2, 2003, pp. 121-130.
6. Li X., Woon T. W., Tan T. S., and Huang Z., Decomposing Polygon Meshes for Interactive Applications. *The 2001 ACM Symposium on Interactive 3D Graphics*, March 19-21, North Carolina, USA, pp.35-42, pp. 243.
7. Koh C. K. and Huang Z., Real-Time Animation of Human Hair Modeled in Strip , *EG CAS 2000*, pp. 101-112.
8. Boulic R., Capin T. K., Huang Z., Kalra P., Linternmann B., Magnenat-Thalmann N., Moccozet L., Molet T., Pandzic I. S., Saar K., Schmitt A., Shen J., Thalmann D., The HUMANOID Environment for Interactive Animation of Multiple Deformable Human Characters . *Comput. Graph. Forum* 14(3): pp. 337-348 (1995).