MATTHEW **PEIZHI YAN**

Ph.D. Candidate at UBC
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RESEARCH INTERESTS

- **Computer Vision**: 3D face and general object reconstruction from 2D images; image generation.
- **Computer Graphics**: NeRF; 3D Gaussian Splatting (3DGS); 3D face modeling.
- **Machine Learning**: Large-Language-Models; foundational 3D generation models; explainable ML.

EDUCATION

- **The University of British Columbia**   Jan. 2021 – Sept. 2025 (Estimated)
  Vancouver, British Columbia, Canada — ***Ph.D. Candidate*** *in Electrical and Computer Engineering*
  Supervisors: Dr. Rabab Ward, Dr. Shan Du
  Thesis: Learning-based 3D Human Face Creation
  GPA: 4.0 / 4.0 (Average Grade: 95%, Letter: A+)

- **Lakehead University**   Sept. 2018 – May 2020
  Thunder Bay, Ontario, Canada — ***M.Sc.*** *in Computer Science*
  Supervisor: Dr. Salimur Choudhury
  Thesis: Towards Machine Learning Enabled Future-Generation Wireless Network Optimization
  GPA: 4.0 / 4.0 (Average Grade: 98%, Letter: A+)
  Distinction: Governor-General's Gold Medal

- **Algoma University**   Sept. 2016 – May 2018
  Sault Ste. Marie, Ontario, Canada — ***B.Sc.*** *in Computer Science*
  Supervisors: Dr. Yi Feng, Dr. George Townsend
  GPA: 4.0 / 4.0 (Average Grade: 96%, Letter: A+)

- **University of Jinan**   Sept. 2014 – June 2019
  Jinan, Shandong, China — ***B.Eng.*** *in Computer Science*

RESEARCH AND WORK EXPERIENCE

The University of British Columbia	**Research Assistant**	Jan. 2021 – Present
Aurora Tech. and Solutions Ltd.	**Founder and Director**	2024 – Present
BC Cancer Research Centre	**Research Assistant**	Jun. 2024 – Oct. 2024
Huawei Canada	**Internship**	Sept 2021 – May 2022
Lakehead University	**Research Assistant and Graduate TA**	Sept 2018 – May 2020
Algoma University	**Research Assistant at BCI Lab**	2017 - 2018

TEACHING EXPERIENCE

Lakehead University

- **Guest Lecturer (9 hours):** *Optimization Method (2020 Spring),* graduate-level course, 29 students
- **Guest Lecturer (6 hours):** *Deep Learning (2020 Winter),* graduate-level course, 83 students

- **Guest Lecturer (6 hours):** *Computer Vision (2019 Fall),* graduate-level course, <u>70 students</u>
- **Guest Lecturer (9 hours):** *Deep Learning (2019 Spring),* graduate-level course, <u>59 students</u>
- **Guest Lecturer (6 hours):** *Optimization Method (2019 Spring),* graduate-level course, <u>19 students</u>
- **Tutor:** *Assembly Language (2019 Winter),* undergraduate-level course, <u>38 students</u>
- **Tutor**: *Data Base Management Systems (2018 Fall),* undergraduate-level course, <u>25 students</u>

ACADEMIC SERVICE

Journal Reviewer
- **Elsevier** *Neurocomputing* (13 reviews)
- **Springer** *Neural Computing and Applications* (1 review)
- **IEEE** *Transactions on Cybernetics* (1 review)
- **IEEE** *Transactions on Circuits and Systems for Video Technology* (18 reviews)
- **IEEE** *Canadian Journal of Electrical and Computer Engineering* (4 reviews)
- **IEEE** *Access* (1 review)

Conference Reviewer
- 2025 Graphics Interface (**GI 2025**) Conference
- 2022 Asian Conference on Computer Vision (**ACCV 2022**)
- 2021 to 2023, & 2025 IEEE International Conference on Image Processing (**ICIP**)
- 2020 The 17th IEEE International Conference on Ubiquitous Intelligence and Computing

Other
- **Volunteer** at IEEE Canadian Conference on Electrical and Computer Engineering (CCECE 2025)
- **International Program Committee Member** for Graphics Interface Conference (GI 2025)
- **Speaker** at BC Cancer Summit on Skin Lesion Image Synthesis with Controllable Skin Tone (2024)
- **Guest Speaker** at Consortium for Advancement of MRI Education and Research in Africa (2023)
- **Invited Talk** on Machine Learning in 3D Face Modeling at UBC (Okanagan) COSC Seminar (2023)
- **Vice President** of Turing Computer Association (S/W Dept.), Univ. of Jinan, China (2015-2016)

PUBLICATIONS

Citations: 163   h-index: 8   i10-index: 6   (statistics are from Google Scholar)

Journal

1. Liu, W., Hopkins, A. M., **Yan, P.**, Du, S., Luyt, L. G., Li, Y., & Hou, J. (2023), "Can Machine Learning 'Transform' Peptides/Peptidomimetics into Small Molecules? A Case Study with Ghrelin Receptor Ligands", *Molecular Diversity*, 1-17.   (SCI Journal, <u>IF: 3.364</u>)
2. **Yan, P.**, & Choudhury, S. (2021), "Deep Q-Learning Enabled Joint Optimization of Mobile Edge Computing Multi-Level Task Offloading", *Elsevier Computer Communications*.   (SCI Journal, <u>IF: 3.923</u>)
3. **Yan, P.** [C], Paul, A. [C], Yang, Y., Zhang, H., Du, S. & Wu, J. (2021), "Non-Iterative Online Sequential Learning Strategy for Autoencoder and Classifier", *Springer Neural Computing and Applications.*   (SCI Journal, <u>IF: 6.106</u>)
4. Tassone, J., **Yan, P.**, Simpson, M., Mendhe, C., Mago, V., & Choudhury, S. (2020), "Utilizing Deep Learning and Graph Mining to Identify Drug Use on Twitter Data". *BMC Medical Informatics and Decision Making*, 20(11), 1-15. (SCI Journal, <u>IF: 3.546</u>)
5. **Yan, P.**, Al-Turjman, F., Al-Oqily, I., & Choudhury, S. (2020), "An Energy-Efficient Topology Control Algorithm for Optimizing the Lifetime of Wireless Ad-hoc IoT Networks in 5G and B5G". *Computer Communications.* Elsevier. (SCI Journal, <u>IF: 3.923</u>)
6. **Yan, P.**, Choudhury, S., & Wei, R. (2020), "A Machine Learning Auxiliary Approach for the Distributed Dense RFID Readers Arrangement Algorithm". *Intelligent and Cognitive Techniques for Internet of Things, IEEE Access Journal.* (SCI Journal, <u>IF: 5.456</u>)
7. **Yan, P.**, & Feng, Y. (2018), "Using Convolution and Deep Learning in Gomoku Game Artificial Intelligence". *Modern Physics Letters A*, 28(03).   (SCI Journal, <u>IF: 1.367</u>)

Conference

8. **Yan, P.***, Ward, R., Tang, Q., & Du, S., "Gaussian Deja-vu: Creating Controllable 3D Gaussian Head Avatars with Enhanced Generalization and Personalization Abilities". In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*. 2025. (**Oral; Accepted in Round 1; Acceptance rate 12%**)

9. Qiu, Z., **Yan, P.**, & Cai, Z., "Large Language Models for Second Language English Writing Assessments: An Exploratory Comparison". Accepted by *the 38th Pacific Asia Conference on Language, Information and Computation (PACLIC 38)*. 2024.

10. **Yan, P.***, Ward, R., Wang, D., Tang, Q., & Du, S., "Learning Disentangled Features for NeRF-based Face Reconstruction". In *Proceedings of the International Conference on Image Processing (ICIP)*. 2023.

11. **Yan, P.***, Gregson, J., Tang, Q., Ward, R., Xu, Z., & Du, S. "NEO-3DF: Novel Editing-Oriented 3D Face Creation and Reconstruction". In *Proceedings of the Asian Conference on Computer Vision (ACCV)*. 2022.

12. Mehajabin, N., **Yan, P.**, Kaur, S., Song, J., Pourazad, M. T., Wang, Y., ... & Nasiopoulos, P. An Efficient Refocusing Scheme for Camera-Array Captured Light Field Video for Improved Visual Immersiveness. In *Proceedings of the 55th Hawaii International Conference on System Sciences*. 2022

13. **Yan, P.***, & Choudhury, S., "Optimizing Mobile Edge Computing Multi-Level Task Offloading via Deep Reinforcement Learning". In *Proceedings of the ICC 2020-2020 IEEE International Conference on Communications (ICC)*. IEEE. 2020.

14. Emu, M., **Yan, P**.*, Choudhury, S., "Latency Aware VNF Deployment at Edge Devices for IoT Services: An Artificial Neural Network Based Approach". In *Proceedings of the ICC 2020-2020 IEEE International Conference on Communications (ICC) on Convergent IoT*. IEEE. 2020

15. **Yan, P.***, Choudhury, S., & Wei, R. "A Distributed Graph-Based Dense RFID Readers Arrangement Algorithm". In *Proceedings of the ICC 2019-2019 IEEE International Conference on Communications (ICC)* (pp. 1-6). IEEE. May, 2019.

16. **Yan, P.***, & Feng, Y. "A Hybrid Gomoku Deep Learning Artificial Intelligence". In *Proceedings of the 2018 Artificial Intelligence and Cloud Computing Conference* (pp. 48-52). ACM. December, 2018.

Preprint

17. **Yan, P.**, Ward, R., Wang, D., Tang, Q., & Du, S., "StyleMorpheus: A Style-Based 3D-Aware Morphable Face Model". arXiv preprint. 2025. (Work completed in 2023)

* indicates the presenter.
c indicates co-first authorship.

SELECTED AWARDS AND HONORS

Canada

- (2020) **The Governor-General's Gold Medal Award** (Canada's highest award in graduate level)
- (2018) **Vector Scholarship in Artificial Intelligence (VSAI)** by Vector Institute, $17,500

University of British Columbia

- (2023) ICICS Travel Award
- (2021, 2022, 2023) Graduate Support Initiative (GSI) Award

PROJECTS

Research-Oriented

- (2024) **Gaussian Deja-vu**: 3DGS-based 3D Head Creation (https://peizhiyan.github.io/docs/dejavu)
- (2024) Mesh-based Neural 3D Face Style Transfer (https://peizhiyan.github.io/docs/style)
- (2023) **StyleMorpheus**: NeRF-based 3D Face (https://github.com/ubc-3d-vision-lab/StyleMorpheus)
- (2022) **NEO-3DF**: 3D Face Creation and Editing (https://peizhiyan.github.io/docs/neo3df)
- (2019) Deep Learning 4X **Video Super-Resolution** (https://www.youtube.com/watch?v=W8TxAPylE0Y)

Other Open-Source Projects

- (2024) **3D Face Reconstruction** and **Tracking** (https://github.com/PeizhiYan/flame-head-tracker) ⭐ 60+ Stars
- (2021) **ZenFlow** Open-Source Machine Learning Demo (https://github.com/PeizhiYan/zenflow)

- (2021) Light-Field Refocusing Algorithm User Interface (https://www.youtube.com/watch?v=pRxXQcuVQSs&t=9s)
- (2019) Open-Source **Whiteboard Web App.** (https://peizhiyan.github.io/www/draw.html)
- (2018) Convolution-Based **Gomoku Game AI** (https://peizhiyan.github.io/js_codes/gomoku)

SUPERVISED AND MENTORED STUDENTS

- **Haoyu Wang** (supervised incoming Ph.D. student at UBC Okanagan, research assistant, Sept – Dec. 2024)
  Projects: 3D face and head tracking; 2D image ear landmark detection.
- **Xiangrui Liu** (supervised master's student at UBC Okanagan, research assistant, May – Aug. 2023)
  Project: 3D and 3D-aware face modeling.
- **Md Nafis Abedin** (supervised student at University of Waterloo, co-op 2020 summer intern)
  Project: Developing an interactive web user interface for the satellite image lichen mapping project.
- **Keizo Kato** (mentored student at UBC Okanagan, 2023) on his undergraduate thesis.
- **Marshall Wenqi Guo** (mentored student at UBC Okanagan, 2023) on his undergraduate thesis.

TECHNICAL SKILLS

- **Programming Languages:** Python, Java, C++, C, JavaScript
- **Open-Source Libraries:** PyTorch, Tensorflow, Keras, Open3D, OpenCV, Gurobi, Paper.js, React
- **Computer Networking:** VPN, SSH, SAMBA, FTP, Router Settings (DHCP, NAT)
- **Others:** LaTeX, Linux, SLURM (HPC), Photoshop, Blender

OPEN-SOURCE PROJECTS CONTRIBUTIONS

- **Simple-KNN (used by 3DGS):** Solved a CUDA device-related issue (PR accepted).
  https://github.com/camenduru/simple-knn

Updated on Mar. 25, 2025