

YAJIE GU

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<https://rmraaron.github.io/>

ABOUT

I am a final-year PhD student in the Department of Computer Science at the University of York, working closely with Professor Nick Pears within the Vision, Graphics and Learning Research Group. My research interests span computer vision and machine learning, with a specialised focus on generative models, particularly in the analysis of 3D facial scans. My recent work has concentrated on exploring implicit representations of 3D facial shapes, developing controllable, parts-based generative models and aiming for 3D human faces identity and expression disentanglement, as well as establishing dense correspondences among 3D shapes.

EDUCATION

University of York *October 2019 - Present*
Ph.D. Student (Writing-up Year) York, UK
Department of Computer Science

Communication University of China *2016-2019*
M.Engineering Beijing, China
School of Computer and Cyber Science

East China University of Technology *2011-2015*
B.Engineering Nanchang, China
Department of Software Engineering

WORK EXPERIENCE

MOOC: Intelligent Systems: An Introduction to Deep Learning and Autonomous Systems [Summer 2023] Graduate Teaching Assistant and Facilitator
July 2023

- Facilitated learning in deep learning and autonomous systems, engaging students in cutting-edge topics and discussions.

H-M: Computer Vision and Graphics (VICO) [Spring 2022] Graduate Teaching assistant
Jan 2022-Mar 2022

- Assisted in delivering course content on computer vision and graphics, enhancing student comprehension and fostering interactive learning. Additionally, provided guidance on experimental design to support students' hands-on learning and research skills.

H-M: Intelligent System 3: Probabilistic and Deep Learning (INT3) [Autumn 2021] Graduate Teaching assistant
Oct 2021-Dec 2021

- Supported instructional efforts in probabilistic models and deep learning techniques and provided assistance in applying theoretical knowledge through hands-on experiments, facilitating a deeper understanding and practical implementation of the learned material.

IBEX Innovations Part-time Intern
Jun 2021-Sep 2021

- Actively participated in the development of neural network models for segmenting voxelised CBCT 3D scans of feet, significantly contributing to advancements in diagnostic methodologies.

UG2: Vision & Graphics (VIGR) [Autumn 2019]
Oct 2019-Dec 2019

Graduate Teaching assistant

- Helped undergraduate students in understanding the fundamentals of vision and graphics, ensuring they grasped the theoretical aspects and could implement them in practical experiments.

Chinese Cryptography-Oriented Multimedia Copyright Protection, Management, and Access Control Supervision Techniques
Sep 2018-Mar 2019

Research assistant

- Participated in the team named ‘Side-Channel Attack Based on Deep Learning’, where we evaluated the accuracy of decryption keys derived from both supervised and unsupervised learning methods.
- Employed CNN to analyse power consumption data (a type of side channel attack in cryptanalysis) to uncover secret keys.

Key Techniques of Personalised Recommendation Systems for Public Digital Cultural Resources
Jun 2017-Aug 2018

Research assistant

- Proposed a personalised recommender system for the Suzhou Public Cultural Center, which experienced daily traffic of approximately 1,000 to 2,000 visitors, based on the WeChat platform.
- In this recommender, we collected users’ online activity data and their actual visitation data to build their profiles. We then employed tag-based algorithms and collaborative filtering to tailor and generate item recommendations for users.
- We utilised Node.js for web page development and integration with WeChat. Python was employed to process data and generate results from the recommender system.

CS DC PM, Siemens Factory Automation Engineering Ltd., Beijing, China
Dec 2017-Mar 2018

Data Analysis Intern

- Managed comprehensive data collection and analysis from all cooperative companies, employing Tableau for data visualization and contributing to weekly strategic presentations with the German headquarters.

2017-WISE Commercial Conference, Beijing International Convention Center, China
Dec 2017

Volunteer

- Assisted in the successful execution of a major AI conference, coordinating with speakers and managing attendee materials.

PUBLICATIONS

Gu, Y. and Pears, N. (2024). Parts-Based Implicit 3D Face Modeling. In Proceedings of the 19th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications - Volume 2: VISAPP, ISBN 978-989-758-679-8, ISSN 2184-4321, pages 201-212. (Oral)

Gu, Y., Pears, N., & Sun, H. (2023, January). Adversarial 3D Face Disentanglement of Identity and Expression. In 2023 IEEE 17th International Conference on Automatic Face and Gesture Recognition (FG) (pp. 1-7). IEEE.

Sun, H., Pears, N., & **Gu, Y.** Information Bottlenecked Variational Autoencoder for Disentangled 3D Facial Expression Modelling. In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (pp. 157-166).

Zhou, J., **Gu, Y.**, & Lin, W. (2019, August). Complementing Travel Itinerary Recommendation Using Location-Based Social Networks. In 2019 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCOM/IOP/SCI) (pp. 1876-1881). IEEE.

Jia, Q., Zhou, J., **Gu, Y.**, Liu, S., & Wu, J. (2018, December). Supporting Movie Production: A Recommender Approach. In 2018 IEEE 4th International Conference on Computer and Communications (ICCC) (pp. 2273-2277). IEEE.

Gu, Y., Zhou, J., & Liu, S. (2018, October). An improved recommender for travel itineraries. In International Conference on Intelligent Information Processing (pp. 223-235). Springer, Cham.

Gu, Y., Zhou, J., Feng, H., Chen, A., & Liu, S. (2018, June). A recommender for personalized travel itineraries. In International Conference on Cloud Computing and Security (pp. 277-288). Springer, Cham.

PROGRAMMING SKILLS

Python, PyTorch, Node.js, C++, Matlab, LaTeX