Ruofei Du

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Career Goals

Lead cross-functional talents to invent the future in *XR, AI, and graphics* – fusing the data from both the physical & virtual worlds, and making it interactive, accessible, and useful.

Professional Experience

Interactive Perception & Graphics Lead / Manager, Google XR Nov. 2022 - Present
Senior Research Scientist, AI + AR, Google Labs Jun. 2020 - Nov. 2022
Research Scientist at Augmented Perception, Google AR Jan. 2019 - Jun. 2020

- Summary: 9+ product launches, 17+ mentees / interns, 50+ patents, 1K+ commits, 40+ papers.
- Our work in AI and XR Realism for Android XR is launched at Google IO '25.
- Our work in Calibration, WebXR, Unity for Android XR is launched at XR Unlocked '24.
- Our work on Visual Blocks and AI debut at the Google I/O 2023 & reached $150K+$ media views.
- Our work on live translation in AR was the closing feature at the Google I/O 2022 keynote.
- Research Lead of Rapsai, Technical Lead Manager of ARChat and Visual Captions.
- Technical Lead of ARCore Depth Lab, published in ACM UIST 2020, 100K+ downloads.

Microsoft Research, Redmond (MSR) 2016 & 2017

- Lead of Montage4D for fusing multiview videos in real time with two papers published.
- Key contributor of Mobile Holoportation, demoed to Microsoft CEO, and filed a US patent.

University of Maryland Institute for Advanced Computer Studies (UMIACS)

- Lead of Geollery.com, one of the first mixed reality social media platforms (ACM CHI 2019).
- **Best Paper Award** for inventing SocialStreetView.com at ACM Web3D 2016.
- HandSight: Real-time text-to-speech with finger-mounted camera for *people who are blind*.

Microsoft Research Asia (MSRA) Jul. 2012 - Feb. 2013

- 3DVAR: Developed a 3D reconstruction system for AR & VR and won a Best Demo Award.

Center for Brain-like Computing and Machine Intelligence (BCMI)

Education

University of Maryland, College Park, Maryland, USA.

Ph.D. and M.S. in Computer Science. Advisor: Prof. Amitabh Varshney
Dissertation: Fusing Multimedia Data Into Dynamic Virtual Environments

ACM Honored Class, Shanghai Jiao Tong University, China.

B.S. in Computer Science. Advisors: Prof. Bao-Liang Lu and Prof. Yong Yu

Skills

- **Leadership**: Managed 3 FTEs, 14+ Interns. Develop People, Build Community, Deliver Results.
- **AI / Large Language Models**: Multi-modal Processing, Real-time Pipelines, Fine-tuning, Agent, Tool-use, Applications, Crowdsourcing, Case Studies, Human-Centric Feedback.
- **Visual Computing**: CUDA, GLSL, HLSL, OpenGL, OpenCV, TensorFlow, and Unity.
- **Domain Knowledge**: Virtual and Augmented Reality, Human-Computer Interaction, Computer Graphics, Computer Vision, Computational Geometry, GPU Algorithms, Social Media, Chatbot, Applications of Large Language Models, WebML, and Information Visualization.
- **Programming**: C++, C, Python, Java, PHP, JavaScript, SQL, C#, and Objective-C.

Representative Products / Publications

Product Summary: *9 launches - ARCore Depth Lab, Depth API for Pixel 4, Portrait Depth API, Visual Blocks, AI Translation Glasses, Android XR Eye/Face Tracking Calibration Apps, Android XR Unity Samples, Android XR WebXR API and Samples, Avatars Graphics.*
IP Summary: *7 issued patents, 60+ patents pending; H-index: 23; 10 journals, 41 proceedings.*

[C.10] **Ruofei Du**, Eric Turner, Maksym Dzitsiuk, Luca Prasso, Ivo Duarte, Jason Dourgarian, Joao Afonso, Jose Pascoal, Josh Gladstone, Nuno Cruces, Shahram Izadi, Adarsh Kowdle, Konstantine Tsotsos, and David Kim. *DepthLab: Real-Time 3D Interaction With Depth Maps for Mobile Augmented Reality*. Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology (UIST), 829–843, 2020. *(100K+ installs, 800+ GitHub stars, 150+ citations)*

[C.7] **Ruofei Du**, David Li, and Amitabh Varshney. *Geollery: A Mixed Reality Social Media Platform*. Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 2019. *(4.5K users at geollery.com, CHI 2019 live demo, two approved U.S. patents)*

[J.3] **Ruofei Du**, Ming Chuang, Wayne Chang, Hugues Hoppe, and Amitabh Varshney. *Montage4D: Real-Time Seamless Fusion and Stylization of Multiview Video Textures*. Journal of Computer Graphics Techniques (JCGT), 8(1), pp. 1–34, 2019. *Debut in Microsoft TechFest 2018*

[C.20] **Ruofei Du**, Na Li, Jing Jin, Michelle Carney, Scott Miles, Maria Kleiner, Xiuxiu Yuan, Yinda Zhang, Anuva Kulkarni, Xingyu "Bruce" Liu, Sergio Escolano, Abhishek Kar, Ping Yu, Ram Iyengar, Adarsh Kowdle, and Alex Olwal. *Rapsai: Accelerating Machine Learning Prototyping of Multimedia Applications Through Visual Programming*. Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems, pp. 1–23, 2023. **Best Paper Honorable Mentions Award** (top 5%)

[C.21] Xingyu "Bruce" Liu, Vladimir Kirilyuk, Xiuxiu Yuan, Peggy Chi, Xiang "Anthony" Chen, Alex Olwal, and **Ruofei Du**. *Visual Captions: Augmenting Verbal Communication With On-the-Fly Visuals*. Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems, pp. 1–20, 2023. *(100K+ Google Research Blog Media Coverage, Live Demo at UIST 2023)*

Open Sourced Software

Most of my code are closed source in internal codebase. Approved ones for reference:

- ARChat: Rapid Prototyping for Augmented Communication. (AI + LLM + Finetuning)
  https://github.com/google/archat
- Visual Blocks: Visual Prototyping of AI Pipelines. (AI + Pipeline)
  https://github.com/google/visualblocks
- Portrait Depth API: Turning a Single Image into a 3D Photo with TensorFlow.js.
  https://github.com/tensorflow/tfjs-models/tree/master/depth-estimation
- DepthLab: Real-Time 3D Interaction With Depth Maps for Mobile Augmented Reality.
  https://github.com/googlesamples/arcore-depth-lab
- DuEngine: An efficient and interactive C++ graphics engine.
  https://github.com/ruofeidu/DuEngine
- DuBibtex: Inpainting unique, complete, and clean BibTeX references.
  https://github.com/ruofeidu/DuBibtex
- Language-based Colorization of Scene Sketches.
  https://github.com/SketchyScene/SketchySceneColorization

Honors and Awards

Best Paper Honourable Mentions Award for InstructPipe at ACM CHI 2025.	May. 2025
Best Paper Honourable Mentions Award for Human I/O at ACM CHI 2024.	May. 2024
Best Student Paper Award for FaceFolds at ACM I3D 2024.	May. 2024
IMWUT Distinguished Paper Award for RetroSphere.	Oct. 2023
Best Paper Honorable Mentions Award (top 5%) for Rapsai at ACM CHI 2023.	Apr. 2023
TVCG Honorable Mentions Award at the IEEE Virtual Reality Conference 2021.	Apr. 2021
Best Student Poster Award for Spherical Harmonics Saliency at ACM I3D 2018.	May. 2018
Best Paper Award at the 21st International Conference on 3D Web Technology.	Aug. 2016
Bronze Medalist in National Olympiad in Informatics (NOI 2008)	Aug. 2008
First Prizes & Top 3 in National Olympiad in Informatics in Province (NOIP)	2005-2007