# Ruiqing Tang

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## Education

**Master in Communication Engineering** 2023.09 - Present
University of Science and Technology, Beijing Beijing, China

**Bachelor in Communication Engineering** 2019.09 - 2023.06
University of Science and Technology, Beijing Beijing, China

## Work Experience

**3D AIGC Algorithm Internship** 2026.03 - present

Yuanjing, Alibaba Group, Beijing, China

- Achieved an Agentic 3D AIGC workflow automating text/image to game-ready model conversion. Engineered autonomous requirement decomposition and multi-tool (decimate, retopology, uv-unwarp, smooth, bake, format conversion) orchestration to enable fully automated 3D asset production from natural language prompts and images. Achieved 25× mesh compression (3K–20K polygons vs. 500K reference) with no perceptible visual quality loss; fully compatible with Unreal Engine and Unity import pipelines.

**3D Digital Human Generation Algorithm Intern** 2025.07 – 2025.12

AiShiWeiLai AI Research , Beijing, China

- Human Image Animation: Enhanced Stable Video Diffusion for robust cross-identity motion transfer.
  - Leveraged GVHMR and HaMer to extract 3D pose sequences; decoupled subject identity from SMPL parameters to derive universal skeletons, and injected reference skeleton IDs via cross-attention for identity-agnostic driving;
  - Dynamically fused ArcFace and LivePortrait embeddings with reference images through Cross Multi-Head Attention to inject facial and global context, significantly improving face-ID consistency and background stability.

**AI Engineer Internship** 2024.05 - 2025.06

CubeVi, Beijing, China (Product & Promo Video)

- 3D Reconstruction: Researched & reproduced SOTA 3D reconstruction techniques (3DGS, InstantSplat, etc.); Built production-ready meshing and stereo-photo generation tools for real scenes (buildings, natural landscapes, etc.), objects and human subjects, delivering immersive AR experience in the RealPlay app of the Companion1.

- 3D Canvas: Developed an interactive 3D canvas enabling sketch-to-rigged-model generation: converts freehand sketches into 3D meshes with automatic skeletal rigging, and supports natural language-driven 3D animation creation.

- 3D Digital Human (Virtual Companion):
  - Motion Capture: Researched & reproduced SOTA 3D human motion capture algorithms (SMPLer-X, GVHMR, HaMeR, etc.) and human motion generation algorithms (MoMask, LODGE, etc);
  - Animation Conversion: Developed end-to-end animation data conversion toolchains (SMPL⇌FBX/VMD/BVH) with cross-engine compatibility (Babylon, Unity, Blender, Unreal Engine), with SMPL2VMD latency reduced to just 400 ms for long-sequence animations (over 3 minutes).
  - Audio: Researched and reproduced SOTA Text-to-Speech (TTS) techniques (Chat-TTS, GPT-SoVITS, etc.) and Singing Voice Conversion algorithms (e.g., RVC, seed-VC); Crawled audio data for various characters, retrained models for each character, and optimized inference speed by converting models to ONNX format; GPT-SoVITS achieved ~1:6 latency (1s synthesis for 6s audio), while RVC voice separation and timbre conversion completed in under 1 minute.
  - LLM&NPC: Developed a digital desktop pet application, integrating TTS, SVC, T2M, and LLM Role Play(Utilized DeepSeek&ChatGPT for data generation and conducted full fine-tuning of ChatGLM-9B and LLaMA3.1-8B) functionalities; Researched AI Agents for social NPC applications, implementing multi-user chatrooms with probability/rule-based behavior control; This digital desktop pet product has been launched in the AI Life app of Companion1.

## Projects and Research

**Mesh Generation** 2026.04-present

- Post-trained Trellis2 via Flow-GRPO reinforcement learning to reduce generated mesh polygon count while enforcing topological consistency and preserving visual fidelity.

**3D Playmate** 2025.02 - Present

Personal Projects, Pursued Out of Interest.

- Conducted secondary development on LODGE, converting SMPL parameters into VMD animations and rendering them using the Three.js framework; Designed structured prompts (character profile, backstory, dialogue, skill attributes, and response constraints) to enable immersive Role Play; Demo presentation on different platforms: youtube, rednote, bilibili.
- Proposed a shared MoE architecture for 3D dance generation, leveraging audio and dance-style embeddings to condition expert routing and enhance motion diversity and quality; Enforced Forward Kinematics constraints on foot joints to mitigate foot-skating artifacts. Further integrated

PHC physics simulation to track generated motions in a physically plausible environment, significantly reducing penetration and joint distortion. Manuscript submitted to *ECCV 2026.*

**SRTP (Student Research Training Program)** 2020.12 - 2021.12

- Studied channel modeling for UAVs and explored communication protocols between UAVs, base stations, and ground terminals;
- Acquired foundational theoretical knowledge of reinforcement learning and applied the DPPO algorithm to optimize power allocation and trajectory planning for UAVs.

## Academic & Reward

[1] **R. Tang,** Y. Shi, F. Liu, X. Huang, I. Kamanga, H. Lv, T. Zhou, G. Tan, G. Zhu, H. Zeng, Y. Li, and X. Zhou, "A Lightweight Neural Network for Pipeline Flow Rate Measurement Using Distributed Acoustic Sensing," *IEEE Transactions on Instrumentation and Measurement (IEEE TIM)*, 2026, 75: 1-13.

[2] I. Kamanga, **R. Tang**, Z. Wang, G. Zhu, F. Liu, and X, Zhou, "Performance enhancement of Φ-OTDR event classification via dynamic MFCCs and multi-scale discriminator-based FastGAN data augmentation," *Measurement*, 2026, 257(PE): 118927-118927.

[3] F. Liu, **R. Tang**, G. Tan, and X. Zhou, "A DAS pipeline flow monitoring method based on lightweight CNN," *Chinese Patent*, CN120043592A. 2025: 16. (Published).

[4] H. Zhang, Y. Li, S. Tang, **R. Tang**, K. Long, P. Gao, and F. Li, "A method and device for allocating transmission power in an unmanned aerial vehicle network based on reinforcement learning," *Chinese Patent*, CN1-13316239B. 2022: 13. (Granted).

[5] **R. Tang**, B. Hu, H. Li, Y. Liu, S. Zhang, W. Zhu, P. Cao, F. Liu, and X. Liu, "AniMorph: Cross-Identity and High-Fidelity Human Animation via Pose and Face Integration," *Neural Networks*, 2026, under review.

[6] Y. Chen, **R. Tang,** and Y. W, "PhysDG: Physically-plausible Multi-genre Dance Generation via Diffusion and Simulation," *European Conference on Computer Vision (ECCV)*, 2026, under review.

[7] H. Lv, F. Liu, **R. Tang**, I. Kamanga, G. Zhu, Y. Chen, A. Zhang, X. Yang, and X. Zhou, "Towards Open-Set Fault Diagnosis for Belt Conveyors Using Distributed Acoustic Sensing," *IEEE Sensors Journal*, 2026, under review.

[8] **R. Tang**, X. Huang, F. Liu, H. Lv, Y, Wang, D. Li, T. Zhou, and X. Zhou, "Pipeline Flow Rate Monitoring Using Distributed Acoustic Sensing and Lightweight Neural Network," *Pacific Rim Conference on Lasers and Electro-Optics (CLEO-PR)*, 2026, under review

- Second Prize, 4th Huawei Cloud Wireless Big Data Competition.

## Skills

- Languages: Python, C++, Shell.
- Framework and libraries: Pytorch, Tensorflow, Scikit-learn, OpenCV, XGBoost, Blender, Unity, UE.