Progress Report

Nuanced Facial Expression Shadowing from Humans

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Outline

- **Work completed in the past four weeks**
  1. Dataset collection
  2. Issues and solutions
  3. Real-world demonstrations

- **Expected outcomes in the following four weeks**
  1. Improve real-world inference performance
  2. Enhance the benchmark and baselines
  3. Draft for IROS25 submission

Dataset Collection

- Statistics
- Characteristics and issues
  - diversity (how to measure? image feature, facial expression, control values, etc)
  - high/low-level controls
  - temporal misalignment

📈 **Dataset Statistics**

Statistics	Train	Validation
# of images	9341-> 83830	2336-> 20958
# of control sequences	83830	20958
# of (image, control sequence)	83830	20958

Issues

- Poor generalization to real-world samples
- Wrinkles and other nuances may not be transferred through the motion transfer model
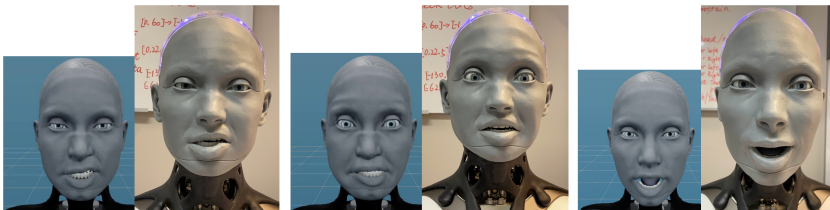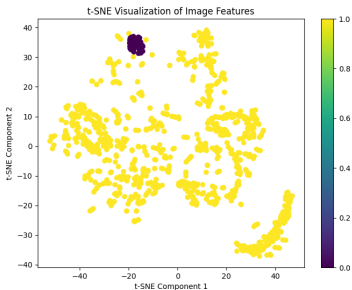- Results of real-world inference

Figure: Results on the validation set.

Solutions

- Feature space visualization
- Training data curation
- Unsupervised domain adaptation
- Collect more data
- Fine-tune Liveportrait

Expected outcomes in the Following Four Weeks

- Improve real-world inference performance
- Enhance the benchmark and baselines
  — evaluation of the dataset: diversity, video duration, and other metrics
  — adopt alternative models as baselines for mapping networks
- Draft for IROS 2025 submission