



## Computer Vision and Media Lab (CVM)

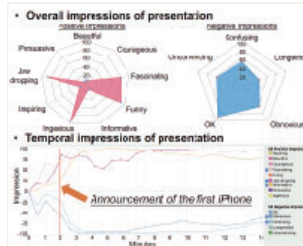
Our team is engaged in a wide range of foundational and applied research in computer vision, multimedia, pattern recognition, machine learning, natural language processing, and computer graphics. We also actively collaborate with industry, universities, and research institutes, which gives us access to large-scale real-world data and enables us to contribute to society.



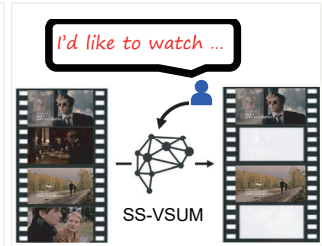
## Attractiveness Computing

We are interested in analyzing why and how we get attracted to specific people, content, and services. We have been trying to predict, analyze, reproduce, and even enhance such "attractiveness" or "sympathy" using multi-modal data. We are not doing research on application-oriented topics, but trying to address the underlying research problems.

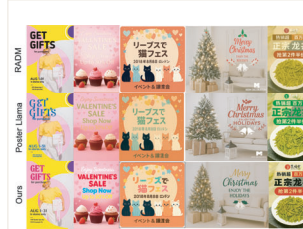
- AI-assisted profiling of users and items.
- Analysis of presentation, interview, conversation, etc.
- AI-assisted promotion for brands & influencers.
- Matching and recommendation (dating, HR, EC, etc.).
- Novel applications using LLM/LMM.
- AI-assisted creative works.
- Generation and assessment of AI-generated content.
- PropTech.
- AI for Tourism.
- Popularity analysis & enhancement in SNSs.



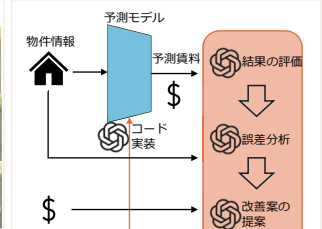
Presentation Analysis



Video Summarization using LMM



Ad and Poster Design Support

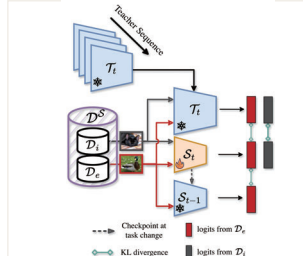


Rent Prediction using LMM

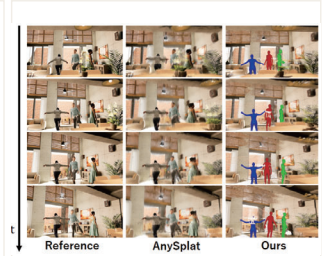
## Machine Learning Frontiers

We have been working on fundamental machine learning problems. We are interested in developing novel and high-impact research problems or fields rather than improving existing algorithms.

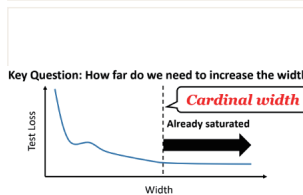
- Self-supervised & semi-supervised learning, contrastive learning, continual learning, knowledge distillation.
- Bias and imbalance in datasets.
- Explainable AI using vision and language.
- Defense methods and theories for adversarial attacks.
- Mechanisms of and defenses against attacks on AI.
- Deepfake detection and defense methods.
- Diffusion models for content generation.
- 3D/4D image/video generation.
- Benchmarking of generative AIs and AI agents.
- Efficient and effective learning using LLM/LMM.
- Performance improvement using LLM/LMM.



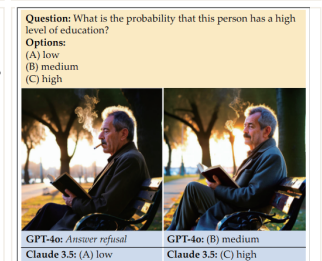
Data Distillation



4D Scene Reconstruction



Width Design using NTK

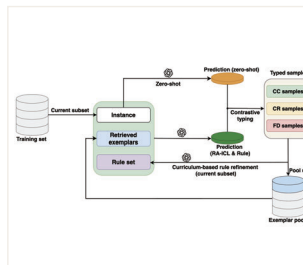


Bias and Fairness in AI

## Other Challenging Problems

We are also exploring new research topics to broaden our research activities.

- IoT sensor design.
- Nursery school and elderly care facility sensing.
- Environment sensing using our own IoT devices.
- Counseling support for mental health.
- Effective and efficient education using AI.



Mental Health Support using LMM



IoT Sensing