- Please skim over the papers below and complete this google form to rate your interest in each paper before **11:59 pm EDT on September 8**.
- Reminder: You will give a full presentation of a paper in 30-35 mins followed up with 5-10 Q&A. During Q&A, each presenter will prepare two quiz questions. The audience who gives the correct answer to each quiz question will get +0.5 bonus point. Otherwise, the presenter will reserve the bonus point.
- These assignments will be made based on your preferences.
- You can also complete the google form now if you are currently on the waitlist but wish to enroll. You will not be assigned any presentation until you are enrolled.

Review and Survey Papers

- [arXiv 2022] Diffusion Models: A Comprehensive Survey of Methods and Applications
- [arXiv 2022] Diffusion Models for Medical Image Analysis: A Comprehensive Survey
- [arXiv 2022] Understanding Diffusion Models: A Unified Perspective
- [Nature Med 2022] Multimodal biomedical AI
- [Nature 2023] Foundation models for generalist medical artificial intelligence
- [Nature 2023] Scientific discovery in the age of artificial intelligence
- [Nature 2023] Computational approaches streamlining drug discovery
- [Cell Reports Med 2023] Integration of artificial intelligence in lung cancer: Rise of the machine
- [Cell 2023] From patterns to patients: Advances in clinical machine learning for cancer diagnosis, prognosis, and treatment
- [Machine Intelligence Research 2023] VLP: A Survey on Vision-language Pre-training
- [Nature MI 2023] Multimodal learning with graphs
- [MedIA 2023] Transformers in medical imaging: A survey
- [arXiv 2023] A Comprehensive Survey on Pretrained Foundation Models: A History from BERT to ChatGPT
- [arXiv 2023] On the Opportunities and Risks of Foundation Models
- [arXiv 2023] BeyondPixels: A Comprehensive Review of the Evolution of Neural Radiance Fields
- [arXiv 2023] Harnessing the Power of LLMs in Practice: A Survey on ChatGPT and Beyond
- [arXiv 2023] On the Challenges and Perspectives of Foundation Models for Medical Image Analysis

Implicit Neural Representation Learning

View synthesis and reconstruction

1. [NeurIPS 2019] Scene Representation Networks: Continuous 3D-Structure-Aware Neural Scene Representations

2. [ECCV 2020] NeRF: Representing Scenes as Neural Radiance Fields for View Synthesis
3. [NeurIPS 2020] Fourier Features Let Networks Learn High Frequency Functions in Low Dimensional Domains
4. [NeurIPS 2020] Implicit Neural Representations with Periodic Activation Functions
5. [CVPR 2021] pixelNeRF: Neural Radiance Fields from One or Few Images
6. [ICCV 2021] Mip-NeRF: A Multiscale Representation for Anti-Aliasing Neural Radiance Fields
7. [CVPR 2022] NeRF in the Dark: High Dynamic Range View Synthesis from Noisy Raw Images
8. [CVPR 2023] AligNeRF: High-Fidelity Neural Radiance Fields via Alignment-Aware Training

Fast optimization

9. [CVPR 2021] Learned Initializations for Optimizing Coordinate-Based Neural Representations
10. [CVPR 2022] Direct Voxel Grid Optimization: Super-fast Convergence for Radiance Fields Reconstruction

Large-scale scene representation

11. [CVPR 2022] Block-NeRF: Scalable Large Scene Neural View Synthesis
12. [CVPR 2022] Mega-NeRF: Scalable Construction of Large-Scale NeRFs for Virtual Fly-Throughs
13. [CVPR 2022] Mip-NeRF 360: Unbounded Anti-Aliased Neural Radiance Fields
14. [ICLR 2023] Switch-NeRF: Learning Scene Decomposition with Mixture of Experts for Large-scale Neural Radiance Fields

Image editing

15. [CVPR 2022] CLIP-NeRF: Text-and-Image Driven Manipulation of Neural Radiance Fields
16. [CVPR 2023] Semantic-driven Image-based NeRF Editing with Prior-guided Editing Field

Biomedical applications

17. [ICLR 2020] Reconstructing continuous distributions of 3D protein structure from cryo-EM images
18. [ICCV 2021] Dynamic CT Reconstruction from Limited Views with Implicit Neural Representations and Parametric Motion Fields
19. [TNNLS 2022] NeRP: Implicit Neural Representation Learning with Prior Embedding for Sparsely Sampled Image Reconstruction
20. [WACV 2023] PINER: Prior-Informed Implicit Neural Representation Learning for Test-Time Adaptation in Sparse-View CT Reconstruction

Generative Diffusion Models

21. [NeurIPS 2020] Denoising Diffusion Probabilistic Models
22. [ICLR 2021] Denoising Diffusion Implicit Models
23. [ICLR 2021] Score-Based Generative Modeling through Stochastic Differential Equations
24. [NeurIPS 2021] Maximum Likelihood Training of Score-Based Diffusion Models
25. [NeurIPS 2022] Elucidating the Design Space of Diffusion-Based Generative Models
26. [ICLR 2022] Tackling the Generative Learning Trilemma with Denoising Diffusion GANs
27. [ICLR 2023] Understanding DDPM Latent Codes Through Optimal Transport
28. [ICML 2023] Consistency Models
29. [ICML 2023] SinFusion: Training Diffusion Models on a Single Image or Video
30. [arXiv 2023] Patch Diffusion: Faster and More Data-Efficient Training of Diffusion Models

Image generation and editing

31. [JMLR 2022] Cascaded Diffusion Models for High Fidelity Image Generation
32. [arXiv 2022] Hierarchical Text-Conditional Image Generation with CLIP Latents
33. [ICML 2022] GLIDE: Towards Photorealistic Image Generation and Editing with Text-Guided Diffusion Models
34. [NeurIPS 2022] Photorealistic Text-to-Image Diffusion Models with Deep Language Understanding
35. [ICLR 2022] SDEdit: Guided Image Synthesis and Editing with Stochastic Differential Equations
36. [ICCV 2023] FreeDoM: Training-Free Energy-Guided Conditional Diffusion Model
37. [ICLR 2023] DreamFusion: Text-to-3D using 2D Diffusion

Inverse problem solving

38. [ICLR 2022] Solving Inverse Problems in Medical Imaging with Score-Based Generative Models
39. [CVPR 2022] Come-Closer-Diffuse-Faster: Accelerating Conditional Diffusion Models for Inverse Problems through Stochastic Contraction
40. [NeurIPS 2022] Improving Diffusion Models for Inverse Problems using Manifold Constraints
41. [NeurIPS 2022] Denoising Diffusion Restoration Models
42. [NeurIPS 2022] Diffusion Models as Plug-and-Play Priors
43. [ICLR 2023] Diffusion Posterior Sampling for General Noisy Inverse Problems
44. [ICLR 2023] Pseudoinverse-Guided Diffusion Models for Inverse Problems
45. [ICLR 2023] Zero-Shot Image Restoration Using Denoising Diffusion Null-Space Model
46. [ICML 2023] Loss-Guided Diffusion Models for Plug-and-Play Controllable Generation
47. [ICML 2023] GibbsDDRM: A Partially Collapsed Gibbs Sampler for Solving Blind Inverse Problems with Denoising Diffusion Restoration
48. [CVPR 2023] Solving 3D Inverse Problems using Pre-trained 2D Diffusion Models
49. [CVPR 2023] Parallel Diffusion Models of Operator and Image for Blind Inverse Problems

50. [arXiv 2023] Fast Diffusion Sampler for Inverse Problems by Geometric Decomposition
51. [arXiv 2023] Direct Diffusion Bridge using Data Consistency for Inverse Problems

Latent diffusion

52. [NeurIPS 2021] Score-based Generative Modeling in Latent Space
53. [CVPR 2022] High-Resolution Image Synthesis with Latent Diffusion Models
54. [NeurIPS 2022] LION: Latent Point Diffusion Models for 3D Shape Generation
55. [arXiv 2022] RoentGen: Vision-Language Foundation Model for Chest X-ray Generation
56. [arXiv 2023] Solving Inverse Problems with Latent Diffusion Models via Hard Data Consistency
57. [arXiv 2023] Solving Linear Inverse Problems Provably via Posterior Sampling with Latent Diffusion Models
58. [arXiv 2023] Versatile Diffusion: Text, Images and Variations All in One Diffusion Model

Diffusion Schrödinger Bridge

59. [NeurIPS 2021] Diffusion Schrödinger Bridge with Applications to Score-Based Generative Modeling
60. [ICML 2023] I2SB: Image-to-Image Schrodinger Bridge
61. [ICLR 2023] Dual Diffusion Implicit Bridges for Image-to-Image Translation
62. [arXiv 2023] Diffusion Schrödinger Bridge Matching

Image-to-image translation

63. [NeurIPS 2022] EGSDE: Unpaired Image-to-Image Translation via Energy-Guided Stochastic Differential Equations
64. [arXiv 2023] Unpaired Image-to-Image Translation via Neural Schrödinger Bridge

Object detection

65. [ICCV 2023] DiffusionDet: Diffusion Model for Object Detection

Video diffusion

66. [NeurIPS 2022] Video Diffusion Models
67. [NeurIPS 2022] Flexible Diffusion Modeling of Long Videos
68. [arXiv 2022] Neural Cell Video Synthesis via Optical-Flow Diffusion
69. [CVPR 2023] Executing your Commands via Motion Diffusion in Latent Space
70. [CVPR 2023] Video Probabilistic Diffusion Models in Projected Latent Space
71. [arXiv 2023] LaMD: Latent Motion Diffusion for Video Generation
72. [arXiv 2023] MagicVideo: Efficient Video Generation With Latent Diffusion Models

Fast solver

73. [ICLR 2022] Analytic-DPM: an Analytic Estimate of the Optimal Reverse Variance in Diffusion Probabilistic Models
74. [Neurips 2022] DPM-Solver: A Fast ODE Solver for Diffusion Probabilistic Model Sampling in Around 10 Steps
75. [Neurips 2022] GENIE: Higher-Order Denoising Diffusion Solvers
76. [arXiv 2023] DPM-Solver++: Fast Solver for Guided Sampling of Diffusion Probabilistic Models

Biomedical applications

77. [NeurIPS 2021] CSDI: Conditional Score-based Diffusion Models for Probabilistic Time Series Imputation
78. [MICCAI 2022] Diffusion Deformable Model for 4D Temporal Medical Image Generation
79. [ICLR 2022] GeoDiff: A Geometric Diffusion Model for Molecular Conformation Generation
80. [ICML 2023] Geometric Latent Diffusion Models for 3D Molecule Generation
81. [MICCAI 2023] Feature-Conditioned Cascaded Video Diffusion Models for Precise Echocardiogram Synthesis
82. [arXiv 2023] Zero-shot-Learning Cross-Modality Data Translation Through Mutual Information Guided Stochastic Diffusion

Self-supervised learning

83. [ICML 2020] A Simple Framework for Contrastive Learning of Visual Representations
84. [NeurIPS 2020] Bootstrap Your Own Latent A New Approach to Self-Supervised Learning
85. [ICCV 2021] Emerging Properties in Self-Supervised Vision Transformers
86. [CVPR 2022] Masked Autoencoders Are Scalable Vision Learners
87. [ICLR 2022] BEiT: BERT Pre-Training of Image Transformers
88. [CVPR 2023] Self-Supervised Learning from Images with a Joint-Embedding Predictive Architecture
89. [IJCV 2023] Context Autoencoder for Self-Supervised Representation Learning

Biomedical applications

90. [CVPR 2023] Benchmarking Self-Supervised Learning on Diverse Pathology Datasets
91. [npj Digital Med 2023] Self-supervised learning for medical image classification: a systematic review and implementation guidelines

Multimodal learning

92. [AAAI 2021] SMIL: Multimodal Learning with Severely Missing Modality

93. [ICLR 2022] Domino: Discovering Systematic Errors with Cross-Modal Embeddings
94. [NeurIPS 2022] Mind the Gap: Understanding the Modality Gap in Multi-modal Contrastive Representation Learning
95. [ICLR 2023] Diagnosing and Rectifying Vision Models using Language
96. [CVPR 2023] Multi-modal Learning with Missing Modality via Shared-Specific Feature Modelling
97. [AISTATS 2023] Understanding Multimodal Contrastive Learning and Incorporating Unpaired Data

Vision language model

98. [ICML 2021] Learning Transferable Visual Models From Natural Language Supervision
99. [NeurIPS 2021] Align before Fuse (ALBEF): Advancing Vision-language Understanding with Contrastive Learning
100. [ICML 2022] BLIP: Bootstrapping Language-Image Pre-training for Unified Vision-Language Understanding and Generation
101. [ICML 2022] OFA: Unifying Architectures, Tasks, and Modalities Through a Simple Sequence-to-Sequence Learning Framework
102. [ICLR 2022] SimVLM: Simple Visual Language Model Pretraining with Weak Supervision
103. [NeurIPS 2022] VLMo: Unified Vision-Language Pre-Training with Mixture-of-Modality-Experts
104. [CVPR 2023] Image as a Foreign Language: BEIT Pretraining for Vision and Vision-Language Tasks
105. [ICML 2023] mPLUG-2: A Modularized Multi-modal Foundation Model Across Text, Image and Video
106. [TMLR 2023] GIT: A Generative Image-to-text Transformer for Vision and Language
107. [CVPR 2023] ImageBind: One Embedding Space To Bind Them All

Biomedical multimodal learning

108. [MLHC 2022] Contrastive Learning of Medical Visual Representations from Paired Images and Text
109. [ICCV 2021] GLoRIA: A Multimodal Global-Local Representation Learning Framework for Label-efficient Medical Image Recognition
110. [NeurIPS 2022] Multi-Granularity Cross-modal Alignment for Generalized Medical Visual Representation Learning
111. [EMNLP 2022] MedCLIP: Contrastive Learning from Unpaired Medical Images and Text
112. [ECCV 2022] Making the Most of Text Semantics to Improve Biomedical Vision–Language Processing
113. [CVPR 2023] Learning to Exploit Temporal Structure for Biomedical Vision–Language Processing
114. [CVPR 2023] Dynamic Graph Enhanced Contrastive Learning for Chest X-ray Report Generation

115. [ICLR 2023] Advancing Radiograph Representation Learning with Masked Record Modeling (MRM)
116. [ICLR 2023] Medical Image Understanding with Pretrained Vision Language Models: A Comprehensive Study
117. [ICCV 2023] CLIP-Driven Universal Model for Organ Segmentation and Tumor Detection
118. [arXiv 2023] Large-Scale Domain-Specific Pretraining for Biomedical Vision-Language Processing
119. [Nature BME 2023] A transformer-based representation-learning model with unified processing of multimodal input for clinical diagnostics

Transformer and LLM

120. [NeurIPS 2020] Language Models are Few-Shot Learners
121. [arXiv 2022] Training language models to follow instructions with human feedback
122. [arXiv 2023] White-Box Transformers via Sparse Rate Reduction
123. [arXiv 2023] Causal Reasoning and Large Language Models: Opening a New Frontier for Causality

Parameter-efficient adaptation

124. [ICLR 2022] LoRA: Low-Rank Adaptation of Large Language Models

Biomedical LLM

125. [npj Digital Med 2022] A large language model for electronic health records
126. [Nature 2023] Large Language Models Encode Clinical Knowledge
127. [Nature 2023] Health system-scale language models are all-purpose prediction engines
128. [Nature Biotech 2023] Large language models generate functional protein sequences across diverse families
129. [Bioinformatics 2023] BioGPT: Generative Pre-trained Transformer for Biomedical Text Generation and Mining
130. [arXiv 2023] PMC-LLaMA: Further Finetuning LLaMA on Medical Papers

Multimodal LLM

131. [NeurIPS 2022] Flamingo: a Visual Language Model for Few-Shot Learning
132. [ICML 2023] Grounding Language Models to Images for Multimodal Inputs and Outputs
133. [ICML 2023] BLIP-2: Bootstrapping Language-Image Pre-training with Frozen Image Encoders and Large Language Models
134. [ICML 2023] PaLM-E: An Embodied Multimodal Language Model

135. [CVPR 2023] SMALLCAP: Lightweight Image Captioning Prompted with Retrieval Augmentation
136. [arXiv 2023] MiniGPT-4: Enhancing Vision-Language Understanding with Advanced Large Language Models
137. [arXiv 2023] Visual Instruction Tuning (LLaVA: Large Language and Vision Assistant)
138. [arXiv 2023] InstructBLIP: Towards General-purpose Vision-Language Models with Instruction Tuning
139. [arXiv 2023] LLaMA-Adapter: Efficient Fine-tuning of Language Models with Zero-init Attention
140. [arXiv 2023] LLaMA-Adapter V2: Parameter-Efficient Visual Instruction Model
141. [arXiv 2023] InternGPT: Solving Vision-Centric Tasks by Interacting with ChatGPT Beyond Language

Biomedical multimodal LLM

142. [arXiv 2023] ChatCAD+: Towards a Universal and Reliable Interactive CAD using LLMs
143. [arXiv 2023] SkinGPT-4: An Interactive Dermatology Diagnostic System with Visual Large Language Model
144. [arXiv 2023] LLaVA-Med: Large Language and Vision Assistant for BioMedicine
145. [arXiv 2023] Multimodal LLMs for health grounded in individual-specific data
146. [arXiv 2023] Towards a Visual-Language Foundation Model for Computational Pathology
147. [arXiv 2023] Med-Flamingo: a Multimodal Medical Few-shot Learner
148. [arXiv 2023] Towards Generalist Biomedical AI

Vision Foundation Model

149. [arXiv 2023] Segment Anything
150. [arXiv 2023] Segment Everything Everywhere All at Once
151. [arXiv 2023] Personalize Segment Anything Model with One Shot

Biomedical applications

152. [arXiv 2023] Medical SAM Adapter: Adapting Segment Anything Model for Medical Image Segmentation
153. [arXiv 2023] Segment Anything Model for Medical Image Analysis: an Experimental Study
154. [arXiv 2023] Segment Anything Model for Medical Images?
155. [arXiv 2023] Customized Segment Anything Model for Medical Image Segmentation

Misc

156. [Nature Com 2022] Federated learning enables big data for rare cancer boundary detection
157. [FACCT 2022] Who Goes First? Influences of Human-AI Workflow on Decision Making in Clinical Imaging
158. [arXiv 2022] Plex: Towards Reliability using Pretrained Large Model Extensions
159. [Nature MI 2023] Extrapolating heterogeneous time-series gene expression data using Sagittarius
160. [Nature Com 2023] Multilingual translation for zero-shot biomedical classification using BioTranslator
161. [Nature Com 2023] Histopathology images predict multi-omics aberrations and prognoses in colorectal cancer patients
162. [Nature Med 2023] A longitudinal circulating tumor DNA-based model associated with survival in metastatic non-small-cell lung cancer
163. [Nature Med 2023] Artificial-intelligence-based molecular classification of diffuse gliomas using rapid, label-free optical imaging
164. [Nature Med 2023] A deep learning algorithm to predict risk of pancreatic cancer from disease trajectories
165. [npj Digital Med 2023] Solving the explainable AI conundrum by bridging clinicians' needs and developers' goals
166. [npj Digital Med 2023] Physics-informed neural networks for modeling physiological time series for cuffless blood pressure estimation
167. [npj Digital Med 2023] A foundational vision transformer improves diagnostic performance for electrocardiograms
168. [Cell Reports Med 2023] Development of an artificial intelligence-derived histologic signature associated with adjuvant gemcitabine treatment outcomes in pancreatic cancer

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