Seminar Logistics

Seminar Registration
Within 3 weeks from the date of topic assignment

Extra Sessions
We have 8 filled slots; the remaining will be filled up.

Reminder
Read the papers and send the questions by Wednesday 8 AM
rdabral@mpi-inf.mpg.de

Moderator
Will get a mail on Wednesday morning
Talk on Talks
Dr. Rishabh Dabral
MPI for Informatics
About Myself

Rishabh Dabral, PhD (IIT Bombay)

Postdoc
Deptt. for Visual Computing and Artificial Intelligence
Max Planck Institute for Informatics

Research Areas
Computer Vision and Graphics
Human motion capture and synthesis
Human-Object Interaction
3D Reconstruction

Webpage:
https://rishabhdabral.github.io/
From Last Week ...

Iterative Process
From Last Week ...

Paper Structure

- Title / Header
- Abstract
- 1. Introduction
- 2. Related Work
- 3. Method
- 4. Experiments
- 5. Conclusions
- Acknowledgements
- References
- Appendix
From Last Week ...

Iterative Process

3-Pass Approach

Scan → Read → Understand
After you’ve understood the paper ... You will have to present them!
OUTLINE

Storyboarding  Preparation  Delivery  Questions
STORYBOARD

Logic over Suspense

VS

http://blogs.nature.com/naturejobs/2017/01/11/scientific-presentations-a-cheat-sheet/
Example Structure

RECAP
Example Structure

OUTLINE

Storyboarding  Preparation  Delivery  Questions
Conditional Human Motion Synthesis

Introduction
Example Structure

METHOD
Example Structure

RESULTS

Graphs showing the performance of different methods over optimization iterations for upper and full body MPJPE.
Example Structure

Questions?
Know Your Audience

Edit/adjust your slides
Audience: University Seminar

**Fellow Students**
Broad technical backgrounds

**Many Topics**
Provide an overview of the SoTA

**Message**
Why is the problem important?

**Investigate**
Novelty and impact

**Seek**
Insights and takeaways

“Not every detail is important”
OUTLINE

Storyboarding  Preparation  Delivery  Questions
Overview Figures: an Example

Can we do better?

Hong et al., "3D-LLM: Injecting the 3D World into Large Language Models". NeurIPS 2023
How do we tokenize 3D data?

3D Scene

Question

Please tell me where is the chair?

3D LLM

Perceiver

LLM

Unified Vocab.

<img> <loc1> <loc2> ... <loc64>

what is the a ... bed

Answer: The chair is located at <loc3><loc56><loc34>.
Tokens

3D Scene

Direct Reconstruct

2D Image  Point Cloud

Multi View

gradSLAM

2D Feature

Neural Field

3D Feature

Question

Please tell me where is the chair?

3D LLM

Unified Vocab.

Perceiver

LLM

what is the a ... bed

364

Answer: The chair is located at <loc3><loc56><loc34>.
How do we tokenize 3D data?

3D Scene

360 sampling

Multi View

Per-pixel features

ConceptFusion, SAM, DINOv2, CLIP-LSeg

3D Feature

3D-2D Alignment

2D Feature

$\langle N, 3 \rangle \rightarrow \langle N, D \rangle$
How do we tokenize 3D data?

But what about language?

Sun et al., Direct Voxel Grid Optimization
Concepts: 
<Wall>, <Curtain>, <Shiny>, <Heavy>, <Big>, <Edible>

Attn: \( \langle f_i, v \rangle \)
Overview Figures: an Example

3D Scene

Multi View

2D Feature

Direct Reconstruct

2D Image \rightarrow Point Cloud

gradSLAM

Neural Field

3D Feature

Question

Please tell me where is the chair?

3D LLM

Perceiver

Unified Vocab.

what is the a ... bed

LLM

Answer: The chair is located at <loc3><loc56><loc34>.

Hong et al., "3D-LLM: Injecting the 3D World into Large Language Models". NeurIPS 2023
Overview figures typically:
• Introduce the core-concept
• Illustrate the inputs/outputs
• Describe the method’s workflow

If you use web sources, do not forget to reference them.

Hong et al., "3D-LLM: Injecting the 3D World into Large Language Models". NeurIPS 2023
Overview Figures: More Examples

Rombach and Blattmann et al., "High-Resolution Image Synthesis with Latent Diffusion Models". CVPR 2023
Overview Figures: More Examples

Preprocessing Step
- Monocular Video
- Personalized Actor Rig
  - Mesh
  - Texture
  - Material
  - Skeleton

Stage I
- Color Stream
- Bottom-up Predictions
  - 2D+3D Joint Detectors
  - 2D Face Detectors
  - Foreground Distance Field
- Pose Estimation
  - Motion Rig

Stage II
- Non-Rigid Deformation

Habermann et al., “LiveCap: Real-time Human Performance Capture from Monocular Video”. ToG 2019
Overview Figures: More Examples

How to traverse them?
Overview Figures: More Examples

Zhang et al., “ROAM: Robust and Object-Aware Motion Generation Using Neural Pose Descriptors”. 3DV 2023
Overview Figures: More Examples

Zhang et al., “ROAM: Robust and Object-Aware Motion Generation Using Neural Pose Descriptors”. 3DV 2023
Overview Figures: Tip

Caption your figures; esp. for the method and the results.

<Your creative explanation here>

Zhang et al., “ROAM: Robust and Object-Aware Motion Generation Using Neural Pose Descriptors”. 3DV 2023
Overview Figures: Tip

<Your creative explanation here>
Attention is precious, don’t lose it

Zhang et al., “ROAM: Robust and Object-Aware Motion Generation Using Neural Pose Descriptors”. 3DV 2023
### Using Tables

#### Table 1: Discharge and Precipitation Data

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<th>Precipitation (in/day)</th>
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#### Graph: Discharge Rate vs Precipitation

Caption your tables; explain the units.

Discharge of the Esopus Creek (Coldbrook, NY) and precipitation at Slide Mountain, NY (source: USGS/NCDC)
Use equations to *express*, not to *impress*.

If you *show* it, you must *explain* it.
Using Maths and Equations

$$\mathcal{E}(T^1, T^2, \ldots, T^{\left|Z\right|}, w) = \sum_{\zeta \in Z} \alpha_\zeta \mathcal{E}_{\text{data}}(T^\zeta) +$$

$$+ \sum_{\zeta \in Z} \beta_\zeta \mathcal{E}_{\text{plCP}}(T^\zeta) + \gamma_\zeta \sum_{\zeta \in Z} \mathcal{E}_{\text{l.reg.}}(T^\zeta, w) +$$

$$+ \eta \mathcal{E}_{\text{r.opt.}}(w) + \sum_{\zeta = 3} \lambda_\zeta \mathcal{E}_{\text{c.}}(T^\zeta).$$
Using Maths and Equations
Using Maths and Equations

\[ E_{\text{traj}}(\theta, z) = \| (1_T \otimes S) + f_\theta(z) - (\Phi \otimes I_3) A \|_\epsilon, \quad \Phi = \begin{pmatrix} \phi_{1,1} & \ldots & \phi_{1,K} \\ \vdots & \ddots & \vdots \\ \phi_{T,1} & \ldots & \phi_{T,K} \end{pmatrix} \]

**Generation Process**

**Latent Update**

\[ \tilde{z}^{(t)} \leftarrow \tilde{z}^{(t)} - \alpha \cdot \nabla_{\tilde{z}^{(t)}} G_{\text{exc}} \]

"Wild off in England would my French food and what we now think"

Selected words by user: french, now

Sidhu et al., ECCV 2020; Mughal et al., CVPR 2024
A scientific talk is about **How** and **Why**.

**General Rules**

- Explain what you do.
- What is new and innovative.
- Motivate why this is the way to go.
General Rules

- No more than one minute per slide on average.
  - Avoid writing complete sentences. But if you must write them, READ them. Else the audience’s focus will be split between reading the text and listening to you.
- Check the slide appearance consistency; colors are important.
- No sound, unless it is part of the results.
- Videos are often results in visual computing. Double-check that they work properly, esp. for cloud-based presentation tools.
- Spelling and writing style
  - Use the same font (or a few fonts).
  - Check the text for typos; check the grammar.
  - Decide between British and American English, and use the chosen language consistently.

3-5 bullets per slide
If a static slide takes 2+ minutes, consider splitting it.
OUTLINE

Storyboarding  Preparation  Delivery  Questions
Preparation Matters
The way you present is as important as your slides.
Immerse Yourself
Speak with conviction.
Be excited about your talk.
Preparation yourself

**Body Language**

Eye Contact
Just the right amount

Immerse Yourself

Presentation Matters

Intonation
Avoid reading from a script
Preparation yourself

**Presentation Matters**

**Immerse Yourself**

**Body Language**

**Rehearse! Rehearse! Rehearse!**

- **Duration Check**: To avoid ‘skipping slides in the interest of time’
- **Logistics Check**: Projectors, connectors, power, A/V
- **Logic Check**: Is the flow right?
Preparing yourself

Feynmann Technique

**Introspect**
What you know, and what you don’t

**Teach a Child**
Sans jargons, with brevity

**Upgrade**
Identify the knowledge gaps, and re-organize
“If you can't explain it simply, you don't understand it well enough.”

https://wikipedia.org/wiki/Albert_Einstein
At the Stage

1. Make yourself comfortable
2. Ensure audibility and visibility
3. Start strong, maybe memorise the start
4. Nervousness is normal

Feel the mood of the room!
Concluding the Presentation

1. Announce the ending
2. Focus on the core points
3. Come back to the big picture

New Perspectives
Describe future works
Discuss potential implications
Concluding the Presentation

1. Announce the ending
2. Focus on the core points
3. Come back to the big picture

Tip

Put some graphics back
For this Seminar

- Compare and Correlate the two papers
- Propose a common conclusion
- Present own ideas/extensions
Questions are Useful

Instant feedback on your presentation.

Can add additional dimensions to the discussion.
QUESTIONS

Rephrase in your words

- Gives you time to think
- Helps the audience too
- Opportunity to clarify
When Replying

- Be concise
  Do not drift from the topic

- Anticipate questions
  Prepare backup slides

- Be positive
  Never demean the question/questioner
Your job is to **foster discussion**, not to **pit the presenter against the audience**.
Prepare a mini-presentation

Weaknesses/limitations of the methods
Summarize & compare
Ask other participants about their ideas
Unclear points
Conclusion
CONCLUSION

Takeaways

- Structure your story
- Filter the core message
- Use figures, tables and maths appropriately
- Practice your presentation
- Be prepared for questions
### Best Presentation-Ever Bingo

<table>
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<th>Over-ran time</th>
<th>Used as many bullet points as humanly possible</th>
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<tbody>
<tr>
<td>Apologized for unreadable slides</td>
<td>Acted as if had never used PowerPoint</td>
<td>Embraced Obfuscation</td>
</tr>
<tr>
<td>Used incredibly complex plots</td>
<td>Used as many slides as humanly possible</td>
<td>Crammed as much as possible onto each slide</td>
</tr>
<tr>
<td>Included a video fail</td>
<td>Didn’t check the presentation worked beforehand</td>
<td>Used tables with more data than any sane person could read</td>
</tr>
</tbody>
</table>
This talk is a revised version of *How to Give a Good Scientific Talk* by Prof. Dr. Christian Theobalt, 2017.

Some ideas are from:
*How to Give a Good Talk* by S. Pfirman (Cornell University), and
*How to Give Scientific Presentations* by T. Williams (Texas A&M University).
Questions?
Questions / Ideas