

Project Ideas

- Improve upon the work in a paper
 - Even a small improvement is OK
- For example,
 - Make a generative model conditional
 - Disentangle (some) latent variables
 - Adapt a method to new circumstances
 - Different kinds of data
 - Missing or noisy data
 - Make a supervised method semi-supervised

Project Ideas

- Examples (continued)
 - Modify the cost function
 - Introduce learnable parameters into a cost function
 - Use an adversarial cost
 - Try a variation on KL divergence
 - Modify the latent priors
 - Make the prior learnable
 - Do not assume Gaussianity
 - Modify the variational assumptions
 - Do not assume complete independence
 - Do not assume Gaussianity

Project Ideas

- Implement and compare different methods for the same problem (e.g., different methods for inferring 3D structure)
 - Clearly and succinctly describe each method
 - Clearly articulate their differences
 - Describe their strengths and weaknesses
 - Ideally, include experiments highlighting the differences between the methods on realistic problems.

Project Considerations

- Is your idea sensible?
- Can you download all the necessary data and software?
- Can you run the software? (on the data?)
- Do you need to modify the software?
- Do you have the source code?
- Can you make the modifications?
- Can you compile and run the source code?
- Are you writing code from scratch?
- Do you have the computational resources (GPUs)?
- Do you have time to complete it?
- Start by duplicating the results in a paper (if it gives enough details).

Project Dates

- Proposal due Tuesday October 15
 - 2-4 pages
 - include preliminary literature search
- Project presentations: November 22 and 29
 - about 4 minutes per student (like “spotlight presentations” at a conference)
- Project due: December 13 (tentative)
 - project report (4-8 pages) and code