

# Weekly Report KARIMI 2021-08-20

My work this week has mainly been towards

1. ACML21 Rebuttal for OPT-AMS paper
2. Federated and Distributed EM paper
3. AAAI22 Submission
4. Compression and Generative Modeling (discussion with Xiaoyun)

## 1 ACML paper

Grades are 2 accept and 1 weak reject. The third reviewer had mainly concerns on some steps of the proofs which I clarified in the rebuttal.

## 2 Federated EM paper

Mostly working on the experiments now. I am encountering some bottleneck to make it work.

**TODO:**

- Plots for a PK model (on oxford boys dataset and warfarin dataset).

## 3 STANLEY paper

The paper is almost ready for submission to AAAI22. Jianwen and I talked about it this week and his concerns are on the inpainting experiments where the Vanilla Langevin baseline is not that good. It might be tuning or something else. I will share my code with him for help.

**TODO:**

- Share codebase with Jianwen to check it.

## 4 Compression and/or Distributed Generative Models

This is a new topic I am interested in developing and which I believe is important.

**Compression for memory saving:** At the sampling step, there might be a need for more memory to store a lot of negative samples. If this pain point is verified, then compression can be used in the MCMC to sample more negative samples while using less memory storage. The result is that the approximation of the gradient will hence be more accurate (because we use more samples) without increasing the memory storage.

**Compression for distributed computing:** Xiaoyun raised another point which is whether EBM has a need for distributed computing (and maybe federated), then compression can be used to alleviate the low bandwidth of the workers. This could be a project but I have to verify that there is a need for distributing the EBM training.

Two important papers that use quantization but for GAN (not EBM) are [1] and [2].

**TODO:**

- Check with Jianwen if memory during the sampling step is an issue.
- Check literature about distributed and federated EBM.

## References

- [1] Peiqi Wang, Dongsheng Wang, Yu Ji, Xinfeng Xie, Haoxuan Song, XuXin Liu, Yongqiang Lyu, and Yuan Xie. Qgan: Quantized generative adversarial networks. *arXiv preprint arXiv:1901.08263*, 2019.
- [2] Yang Zhao, Chunyuan Li, Ping Yu, Jianfeng Gao, and Changyou Chen. Feature quantization improves gan training. *arXiv preprint arXiv:2004.02088*, 2020.