CSE3000 Weekly Progress Presentation

WEEK 9

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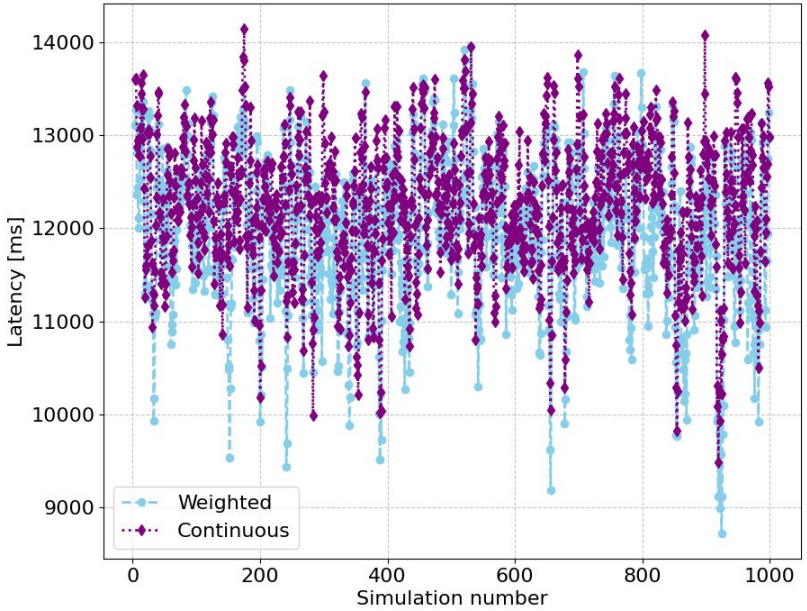
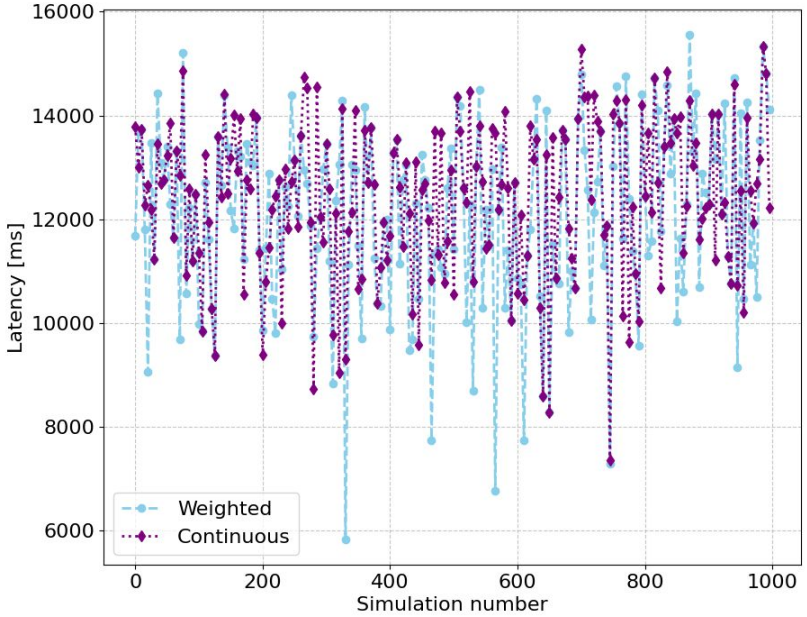
Hotstuff

- ➔ **Hotstuff : all weights 1 - baseline**
- ➔ **Weighted Hotstuff : discrete voting assigned based on the setup**
- ➔ **Best Weighted Hotstuff : best assigned discrete weights such as latency is minimised for both normal and faulty scenarios**
- ➔ **Continuous Weighted Hotstuff : assignment of continuous weights such as latency is minimised for both normal and faulty conditions**
- ➔ **Optimal Leader Rotation Weighted Hotstuff : best leader rotation with discrete voting assigned based on the setup**
- ➔ **Optimal Leader Rotation + Best Weighted Hotstuff : best leader rotation with best assigned discrete weights**

Continuous Weighted Hotstuff



moving average version



less points

Chained Hotstuff

- ➔ **Chained Hotstuff : all weights 1 - baseline**
- ➔ **Weighted Chained Hotstuff : discrete voting assigned based on the setup**
- ➔ **Best Weighted Chained Hotstuff : best assigned discrete weights such as latency is minimised**
- ➔ **Optimal Leader Rotation Weighted Chained Hotstuff : best leader rotation with discrete voting assigned based on the setup**
- ➔ **Optimal Leader Rotation + Best Weighted Chained Hotstuff : best leader rotation with best assigned discrete weights**

RESULTS

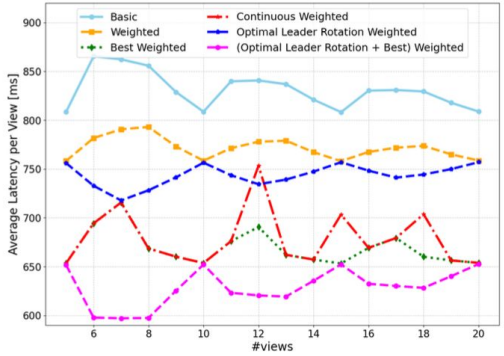


Figure 2: Average latency per view in **Hotstuff** protocol variants with $f = 1, \Delta = 1$.

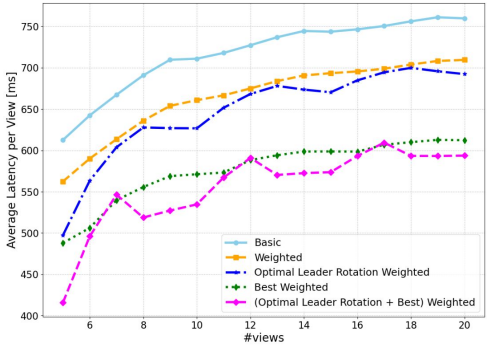


Figure 4: Average latency per view in **Chained Hotstuff** protocol variants, $f = 1, \Delta = 1$.

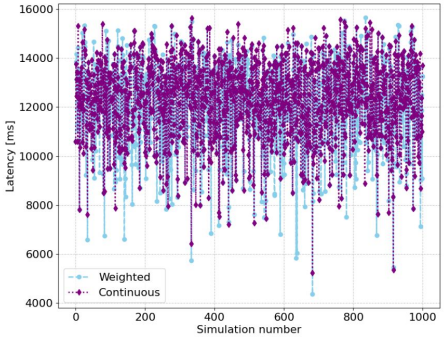


Figure 6: Weighted vs Continuous Weighted Hotstuff latency performance, $n = 5$, 10 views executed.

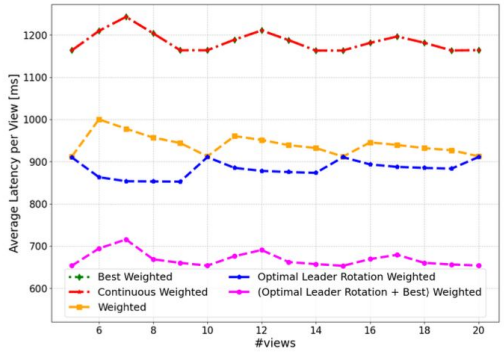


Figure 3: Average latency per view in **Hotstuff** protocol variants for **faulty scenario**, $f = 1, \Delta = 1$.

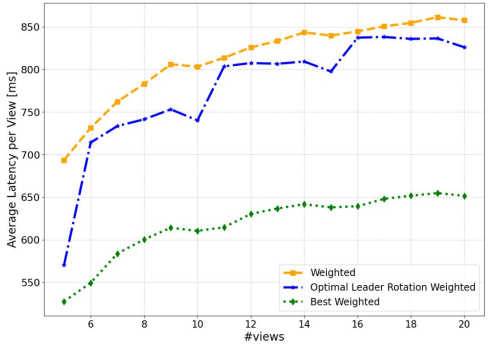


Figure 5: Average latency per view in **Chained Hotstuff** protocol variants for **faulty scenario**, $f = 1, \Delta = 1$.

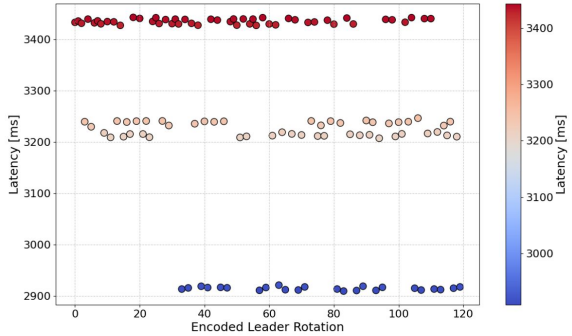


Figure 1: Analysis of impact of leader rotation on Hotstuff's latency performance, $n = 5$, 4 views executed.

Discussion on paper

1. reputation-based [15] protocols. Building on top of this kind of mechanism, WHEAT [16] achieved higher performance for state machine replication in geographically distributed settings. Next, researchers put together an enhanced version of PBFT, namely BFT-SMaRt [17] **JD: BFT-SMaRt existed before WHEAT** and the weighted voting mechanism behind WHEAT to create AWARE [18], a deterministic, self-monitoring and self-optimising algorithm for optimising the latency of the blockchain.

2. 2. We analyse how optimising the weight distribution to replicas and/or leader rotation impacts latency. **JD: be a bit more precise here**

3. chained version remains unexplored. **JD: discussion of FlashConsensus has to be consolidated: they use weights, best leader selection, and smaller quorums with HotStuff.**

4. **Best JD: Best discrete weights** The weight assignment to eplicas represents a critical point of improvement. Hence,

Goals for the END

1. Respond to feedback on the paper and adjust it accordingly.
2. Complete experiments framework, clean the codebase and write a READme file explaining the contents of the repository.
3. Check the overall project for correctness and ensure transparency of the whole research.
4. Poster and Presentation slides.
5. Submit the deliverables.

My Questions