**Design Document**

**Abstract:**

**Section 1: Introduction**

* **Problem definitions**
* **Naïve and non-naïve approaches**
* **Overview of our approach**

**Section 2: Mathematical basis**

* **Primal and dual problems**
* **Discussing loss and convexity**
* **Discussing algorithm variations and**

**Correction projections**

**Section 3: Implementation**

* **Data generating process + proof of correctness + Visualization**
* **Architecture selection**
* **Evaluation and initial benchmark**
* **Considering batch translation invariance by training on distance matrices instead of actual vectors, or correcting mean of vectors to be the origin (more efficient?)**

**Section 4: Bootstrap aggregation**

* **Bootstrap aggregation interaction.**

**Section 5: Trying basic invariant networks (maybe)**

* **invariant networks**
* **Batch Pre-Sorting**
* **nxn Matrix permutation invariance.**

**Section 6:**

* **Conclusions**

**Appendix & references:**

* **Useless claim proof 😊**
* **Proof of data generation correctness**