7/11/2024 - 7//2024

- Compare Single and Double-precision BFBCG between CUDA and MATLAB

Achieved:
- Check device query whether double is available
  - https://github.com/keiakihito/Double_BFBCG_Comparison/blob/main/NCSA%20delta%20Device%20Query.txt

- Compare Double vs Float between CUDA and MATLAB

  - Case 1 Sparse 5 by 5, block 3
    - 🟩 Double-Case1_5by5by3
    - 🟩 Float-Case1_5by5by3

  - Case 2 Sparse 10 by 10, block 5
    - 🟩 Double-Case2_10by10by5
    - 🟩 Float-Case2_10by10by5

  - Case 3 Sparse 17 by 17, block 16
    - 🟩 Double-Case3_17by17by16
    - 🟩 Float-Case3_17by17by16

  Note: I prefer double because it converges without becoming rank 0 for search direction P. Float goes to rank 0, then exits iteration with some residual value through validation.

- Benchmark BFBCG and CG
  - 🟩 BenchMark BFBCG_CG
  - Inverse function with LU

- Compare inverse operation between LU and QR.
  - 🟩 Comparison_inverse_LU_QR
  - QR is slightly better performance

TO DO
- Considering inverse
- Considering orth
- Reseraching cusolver QR factorization with thin QR, and rank revialing.

Issue