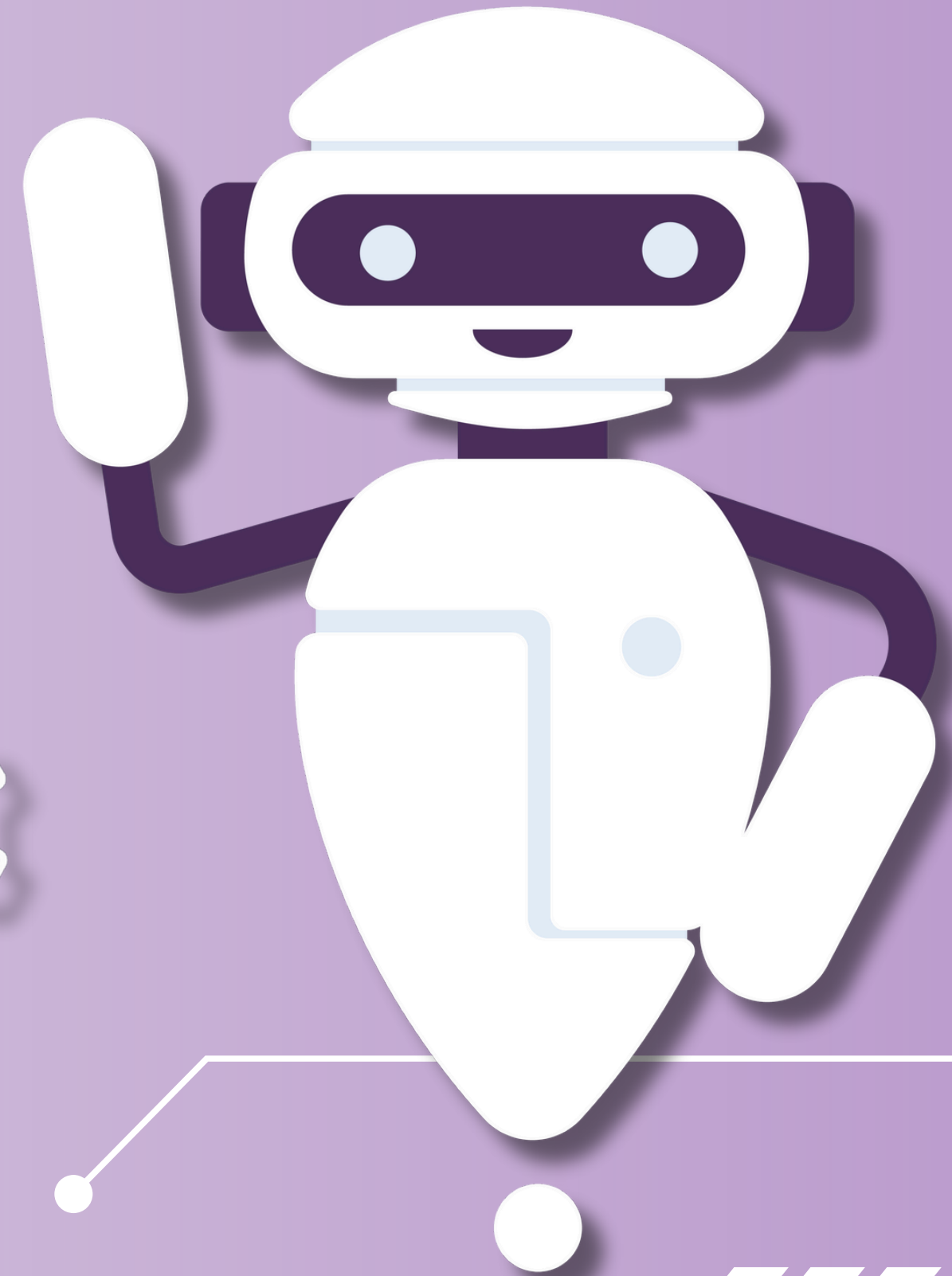
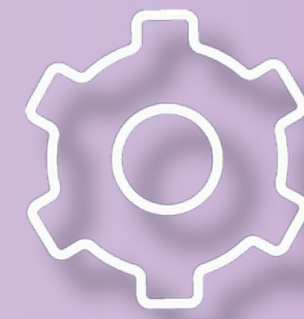
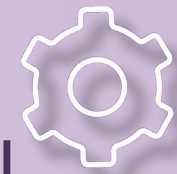


STRUCTURED ASIC

ALL THE FOLLOWING RESULTS ARE FOR 6502 DESIGN



DIGITAL DESIGN 2
INSTRUCTOR: DR.SHALAN

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PHASE 1

PHASE 2

**KEY
RESULTS**



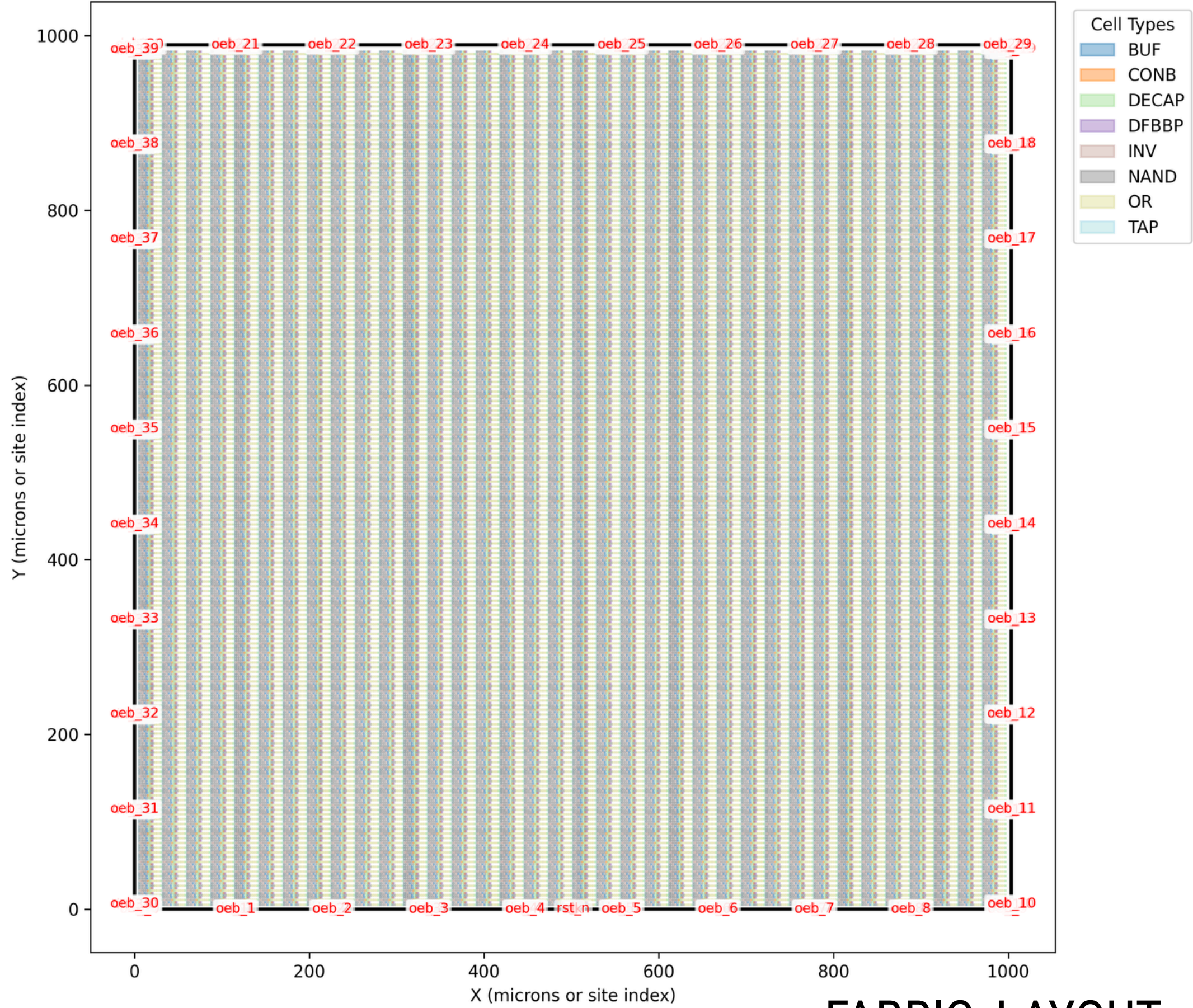
```
PS D:\Downloads\structured_asic_project-main> python src/validator.py fabric designs/6502_mapped.json
```

Cell Type	Used / Available	Utilization
BUF	322 / 9720	(3.3%)
CONB	3 / 9720	(0.0%)
DECAP	0 / 19440	(0.0%)
DFBBP	143 / 6480	(2.2%)
INV	360 / 12960	(2.8%)
NAND	1228 / 48600	(2.5%)
OR	843 / 25920	(3.3%)
TAP	0 / 25920	(0.0%)

```
âœ“ Validation passed: Design is buildable on fabric.
```

FABRIC VALIDATION RESULTS

Structured ASIC Fabric Layout



FABRIC_LAYOUT



PHASE 2

PLACER ALGORITHM

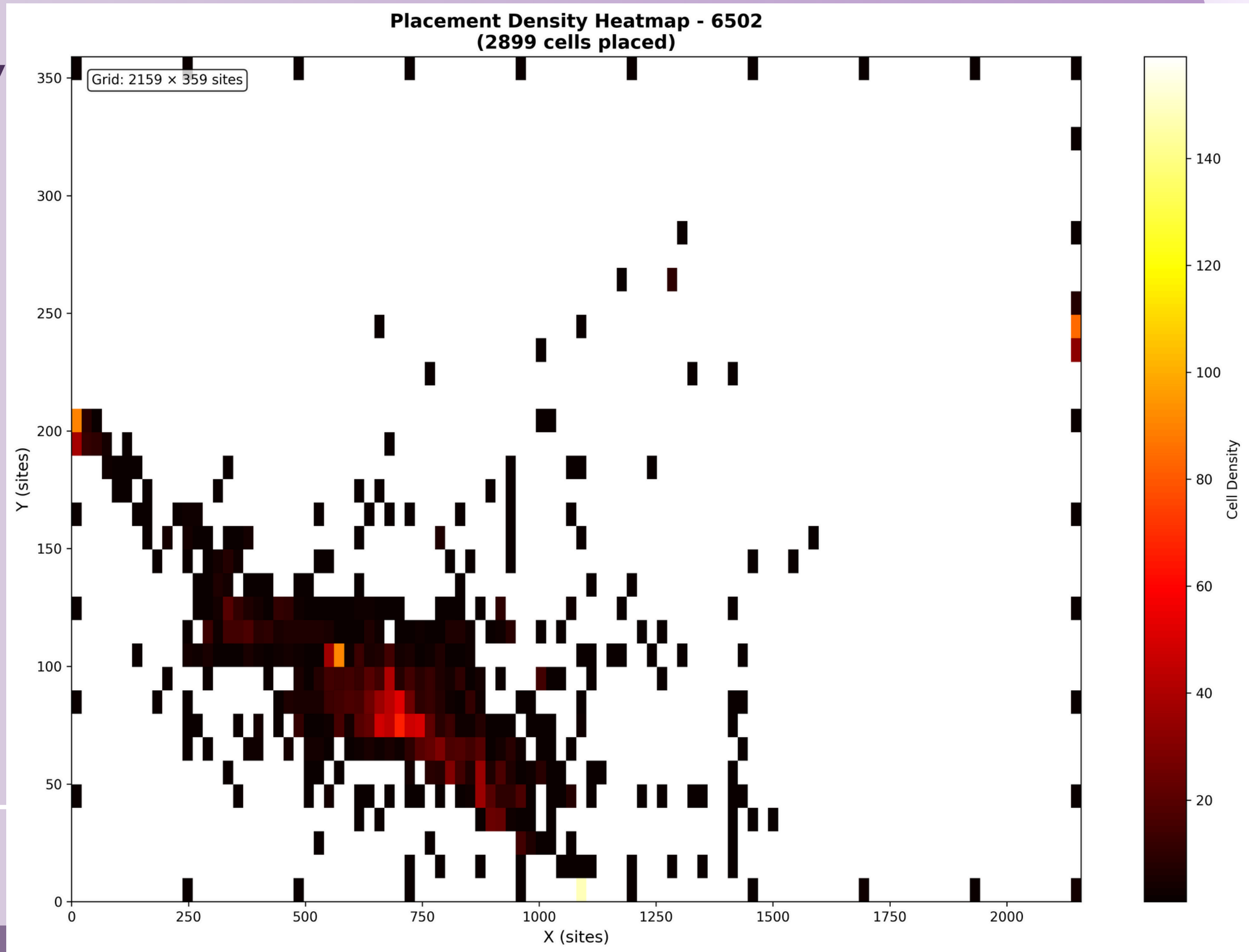
GREEDY ALGORITHM GREEDY

SIMULATED ANNEALING SA

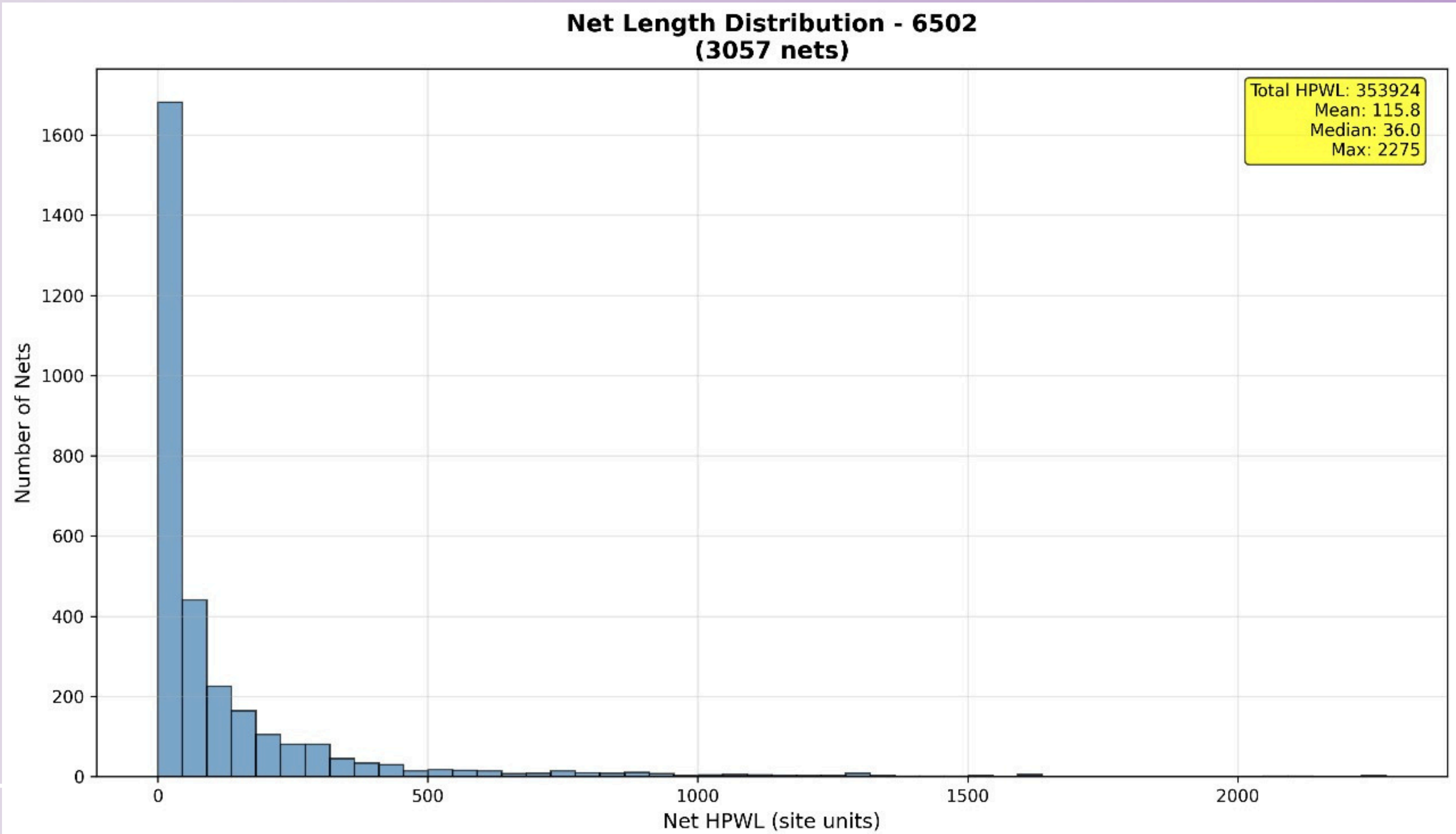


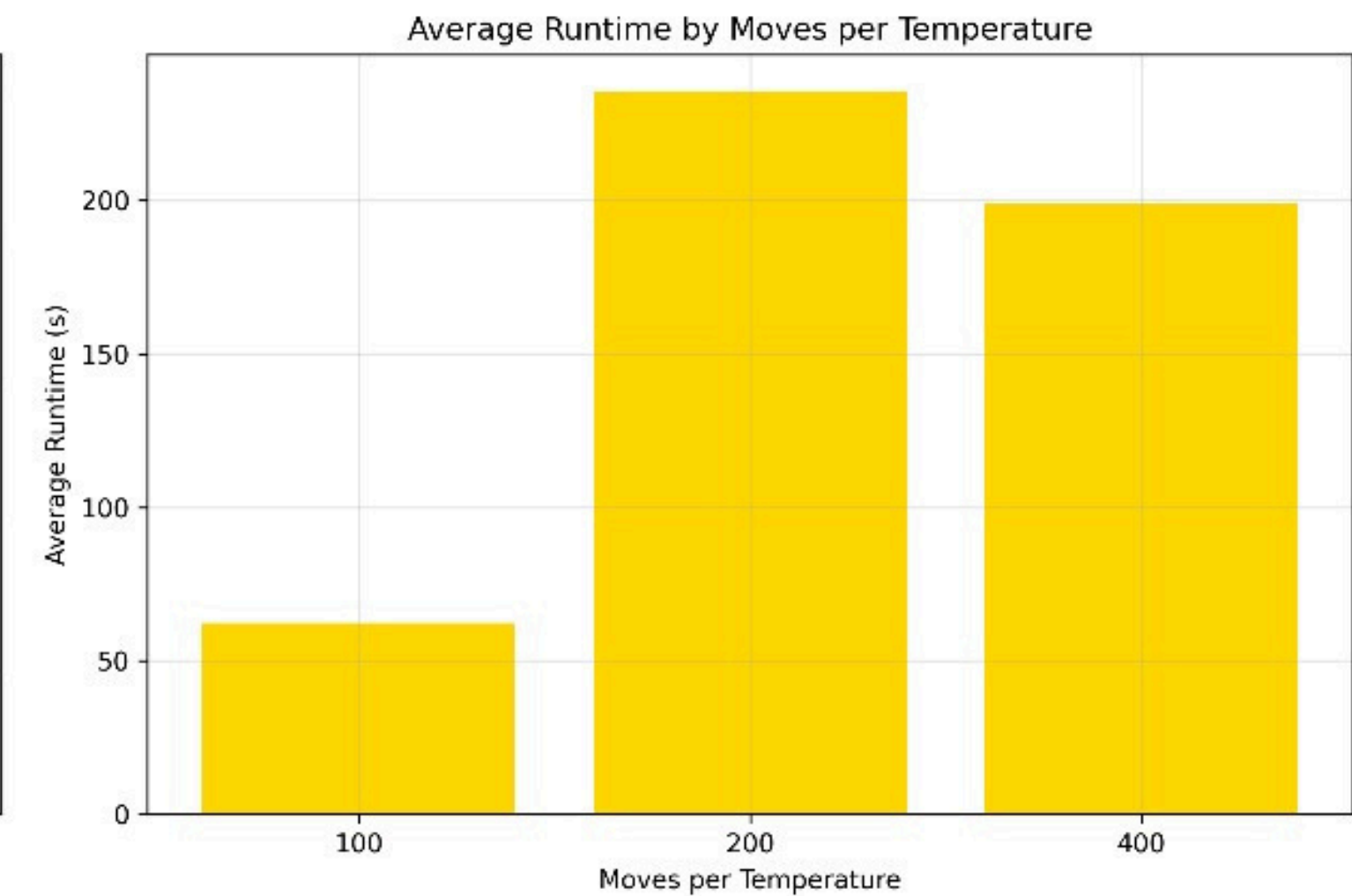
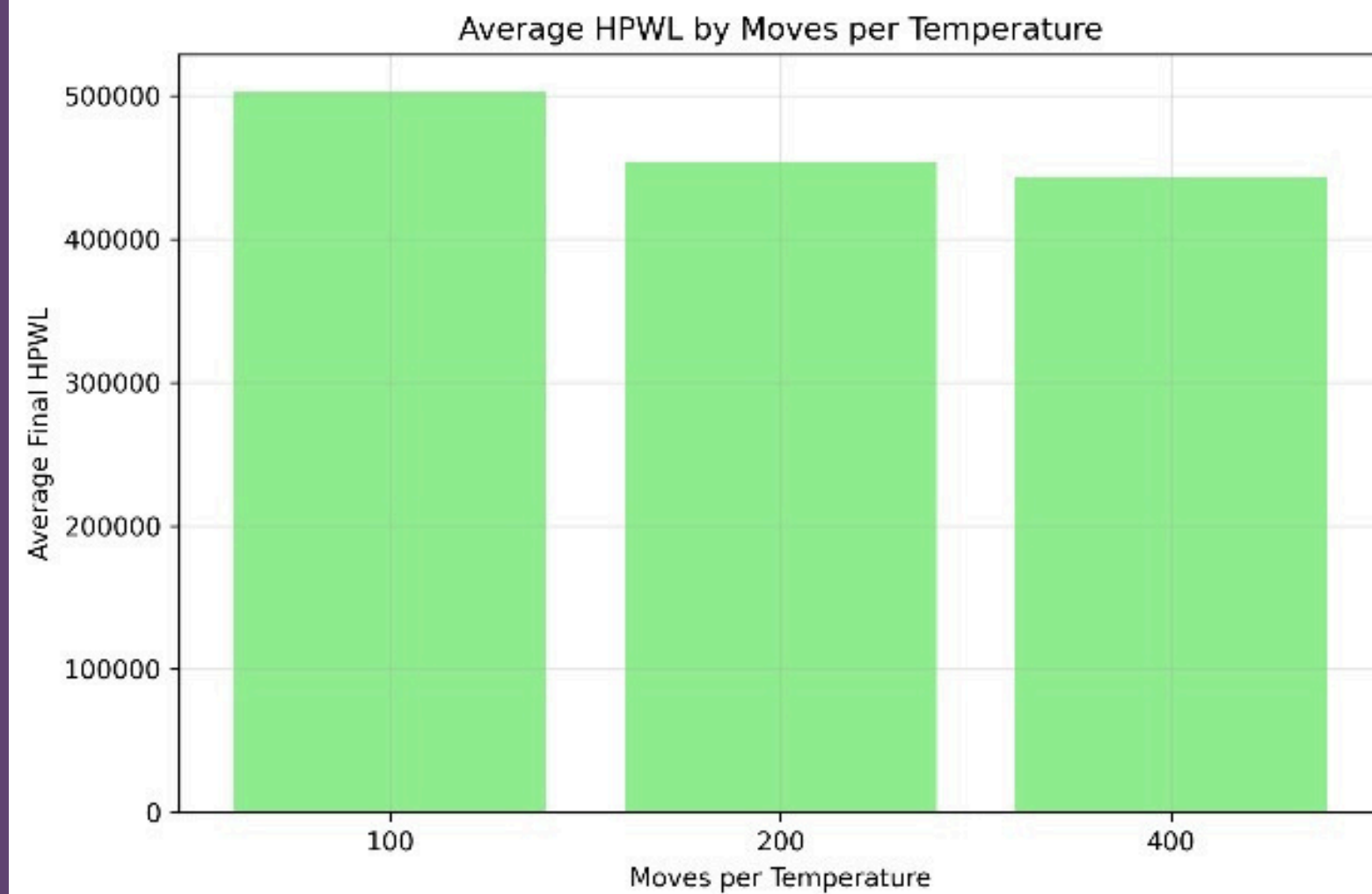
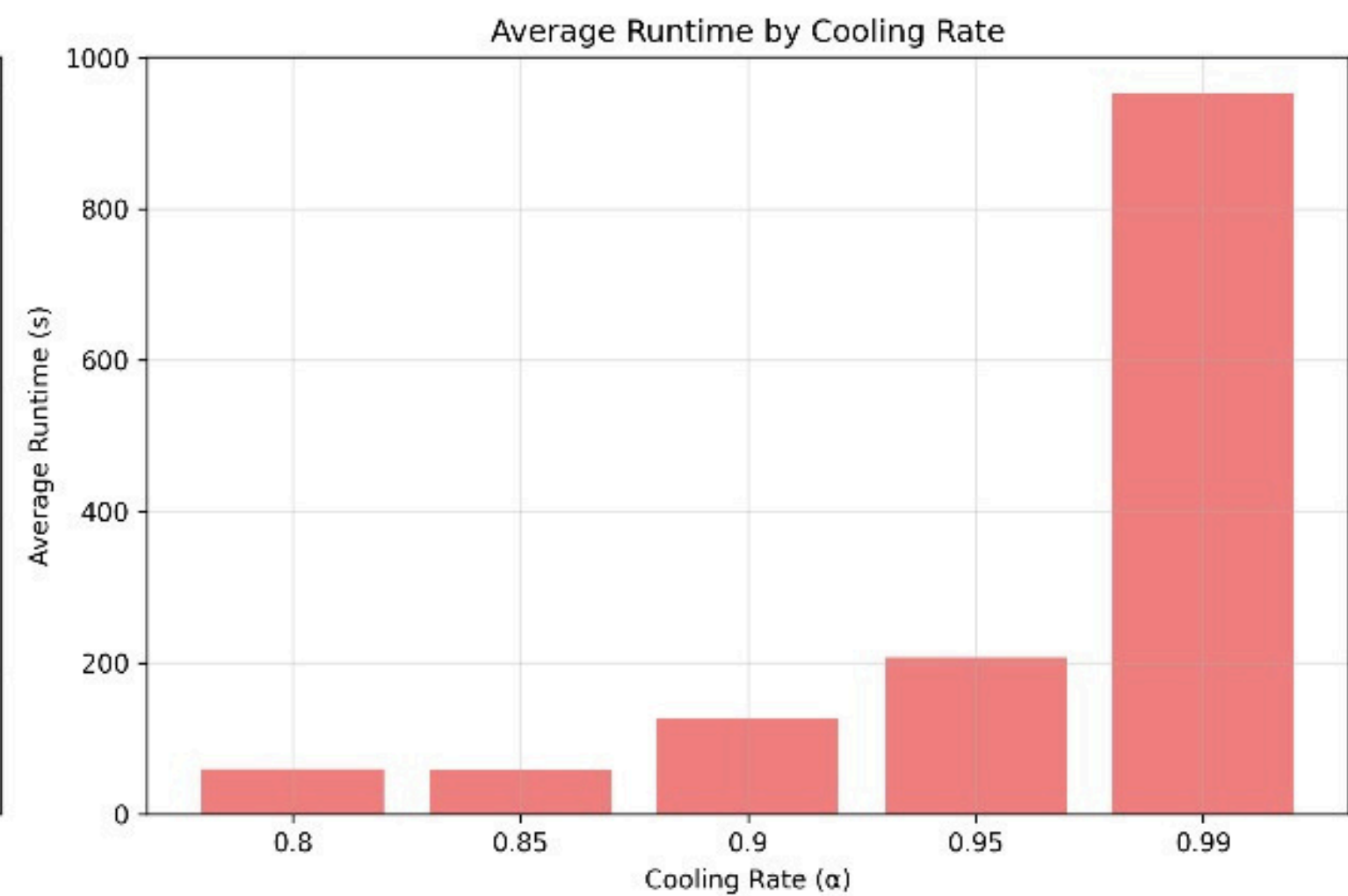
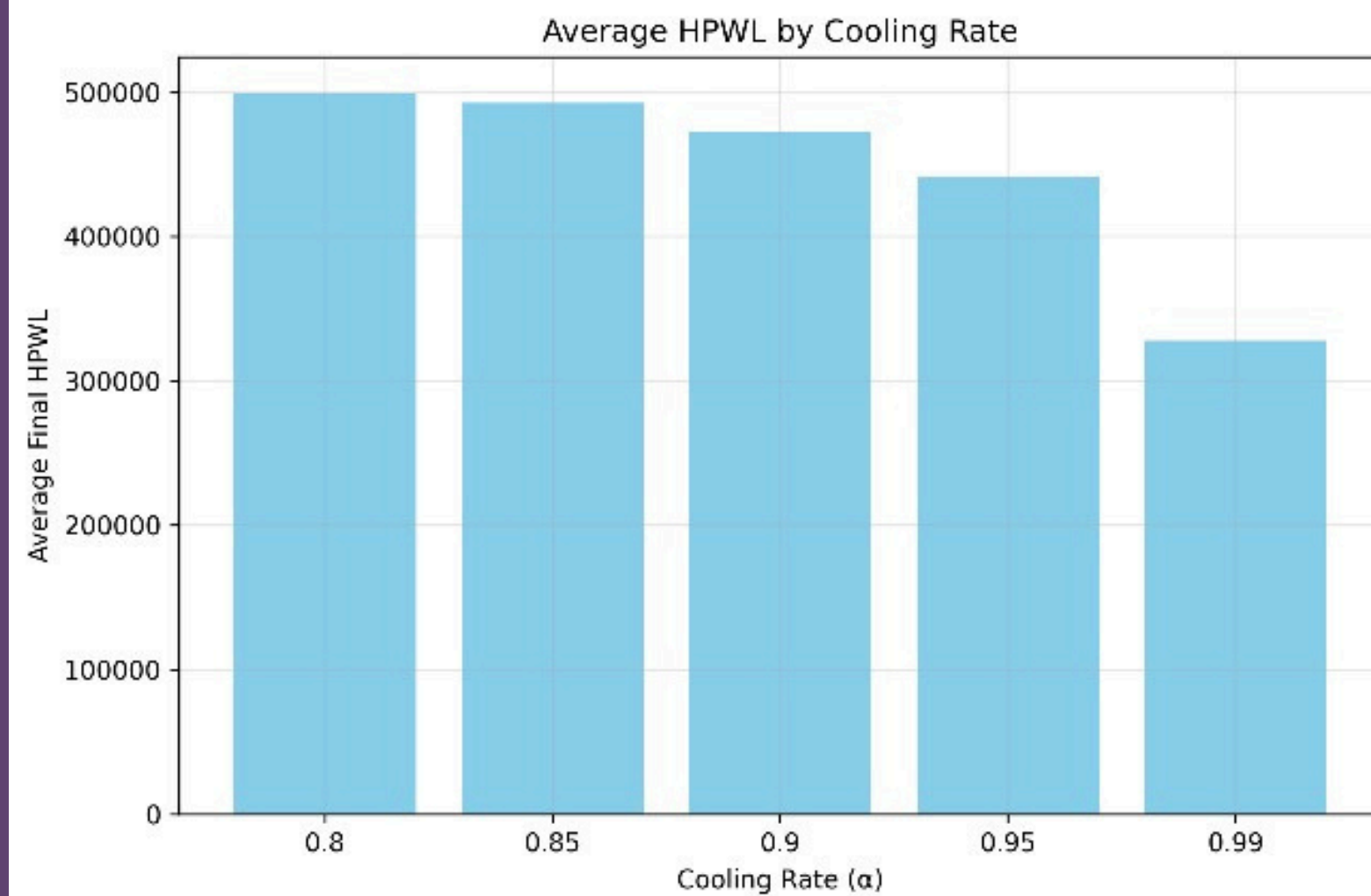
KEY RESULTS

PLACEMENT_DENSITY

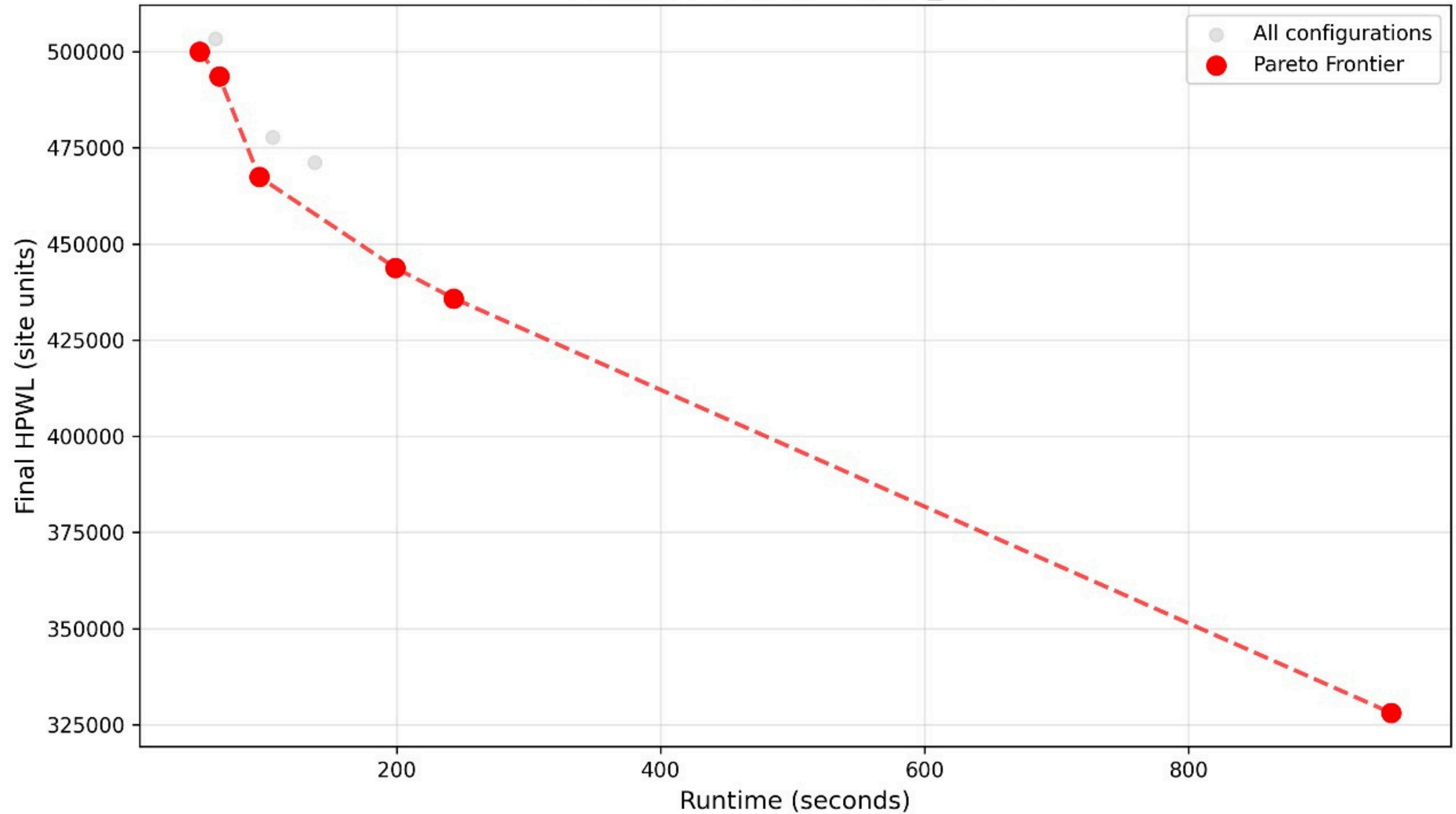


NET_LENGTH_HISTOGRAM

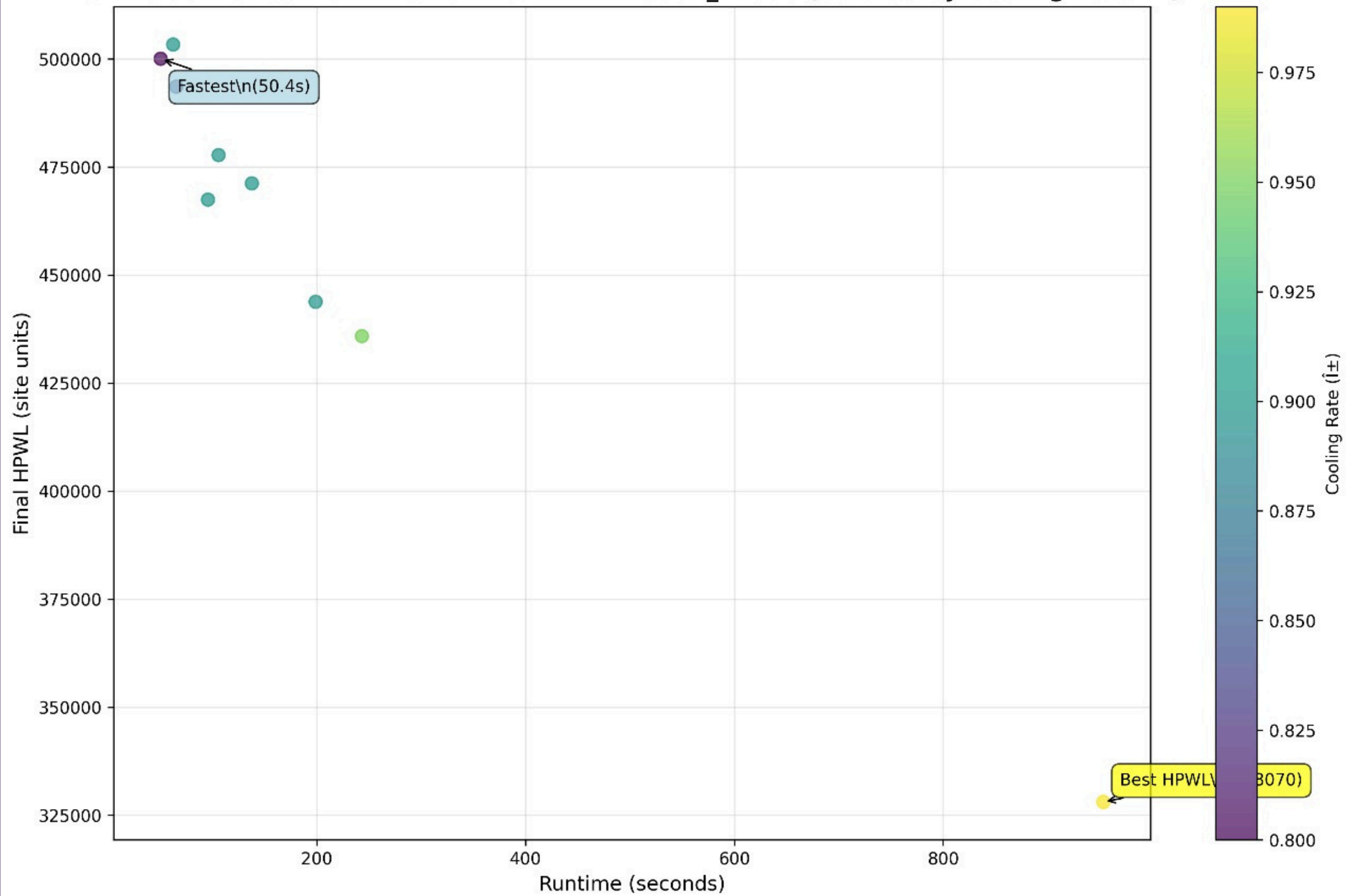




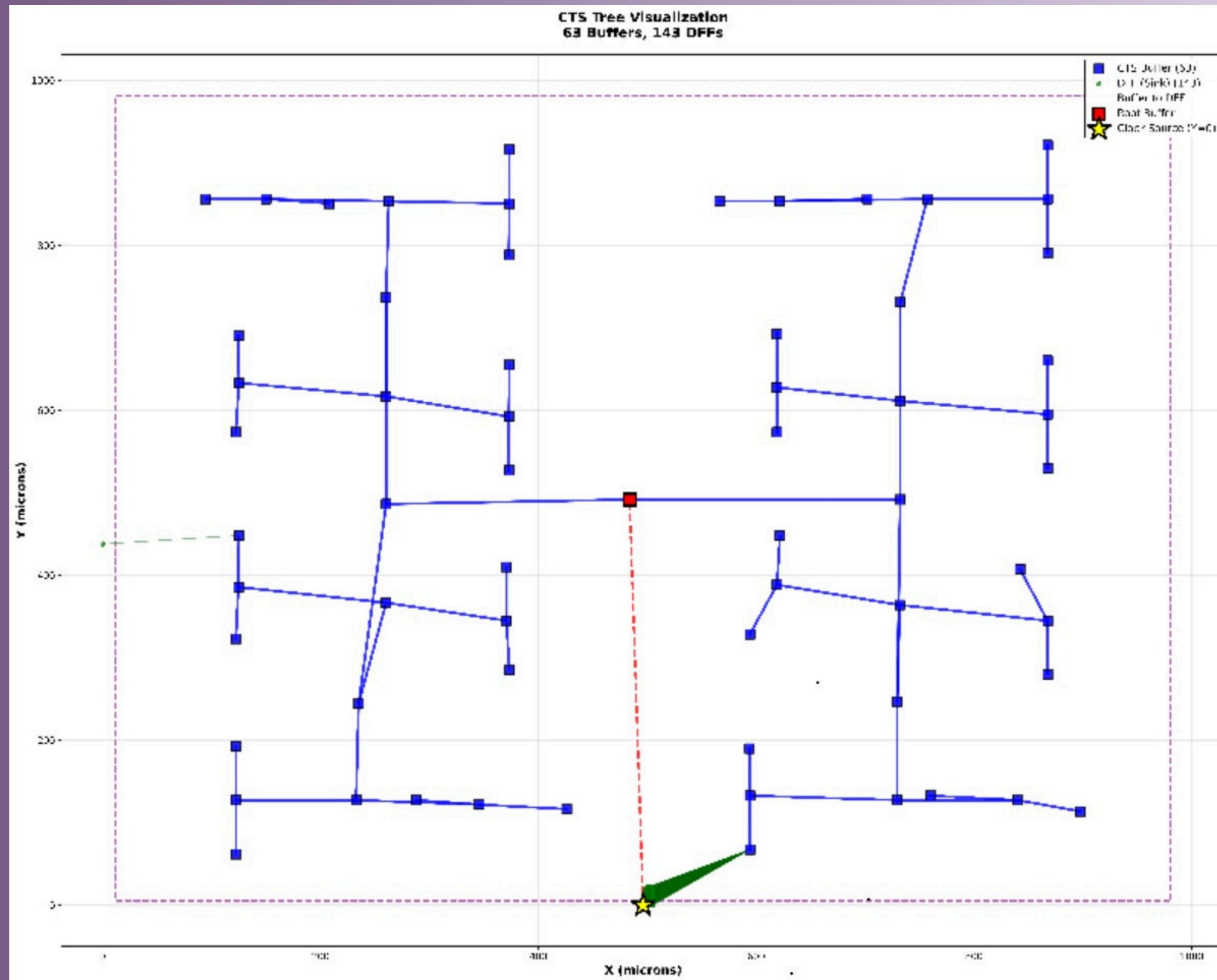
Pareto Frontier - 6502_T100



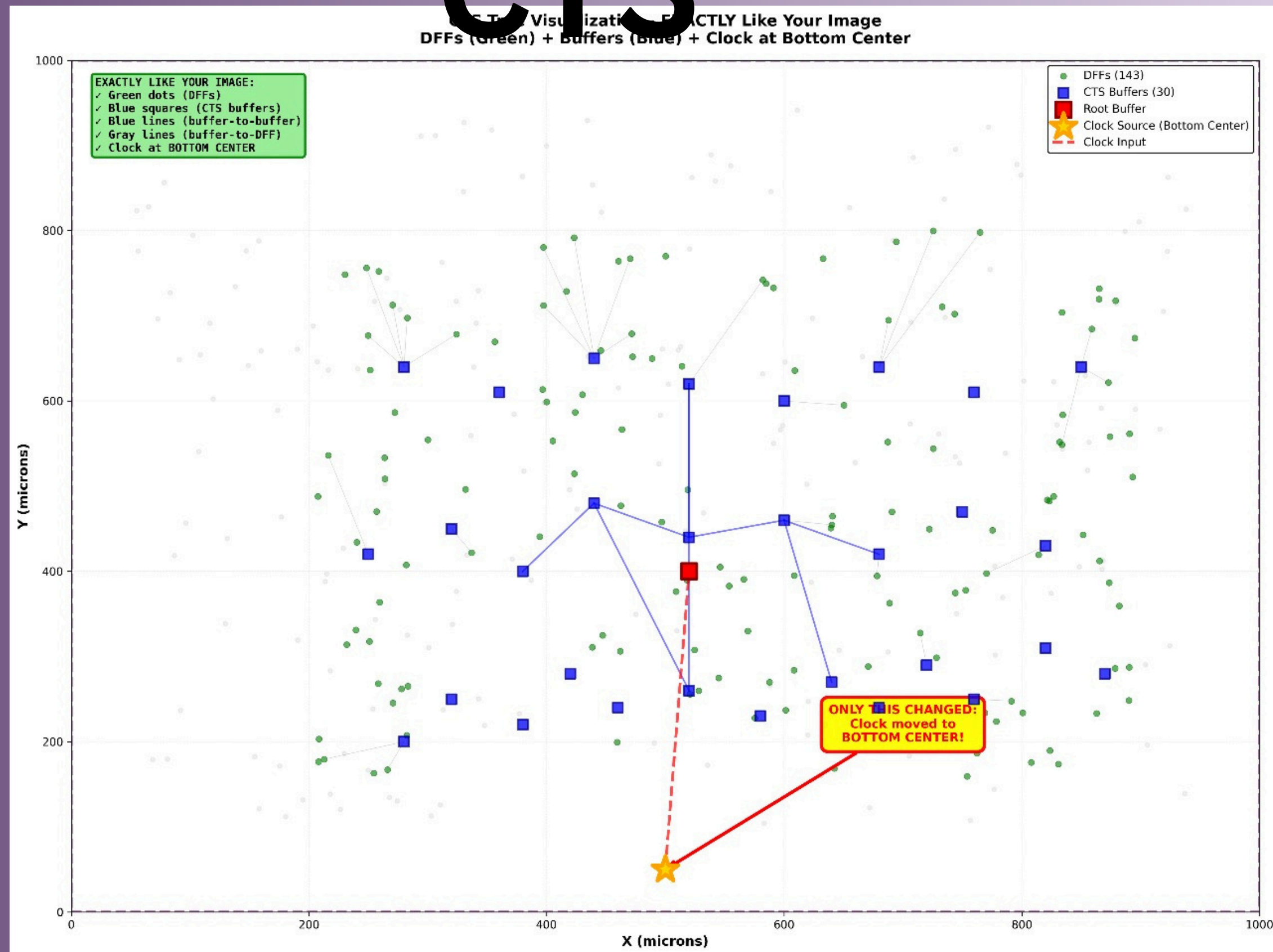
SA Performance: Runtime vs Final HPWL - 6502_T100\n(Colored by Cooling Rate $\hat{I} \pm$)



CTS



CTS




```
Terminal
[SA] iter=1588 T=0.0117 W=0.00 curr=221958.000 best=221958.000
[SA] iter=1589 T=0.0116 W=0.00 curr=221952.000 best=221952.000
[SA] iter=1590 T=0.0115 W=0.00 curr=221935.000 best=221935.000
[SA] iter=1591 T=0.0114 W=0.00 curr=221933.000 best=221933.000
[SA] iter=1592 T=0.0113 W=0.00 curr=221925.000 best=221925.000
[SA] iter=1593 T=0.0111 W=0.00 curr=221898.000 best=221898.000
[SA] iter=1594 T=0.0110 W=0.00 curr=221882.000 best=221882.000
[SA] iter=1595 T=0.0109 W=0.00 curr=221864.000 best=221864.000
[SA] iter=1596 T=0.0108 W=0.00 curr=221848.000 best=221848.000
[SA] iter=1597 T=0.0107 W=0.00 curr=221828.000 best=221828.000
[SA] iter=1598 T=0.0106 W=0.00 curr=221820.000 best=221820.000
[SA] iter=1599 T=0.0105 W=0.00 curr=221800.000 best=221800.000
[SA] iter=1600 T=0.0104 W=0.00 curr=221785.000 best=221785.000
[SA] iter=1601 T=0.0103 W=0.00 curr=221782.000 best=221782.000
[SA] iter=1602 T=0.0102 W=0.00 curr=221766.000 best=221766.000
[SA] iter=1603 T=0.0101 W=0.00 curr=221763.000 best=221763.000
[SA] iter=1604 T=0.0100 W=0.00 curr=221761.000 best=221761.000
[SA] finished. best HPWL = 221761.000
Final SA HPWL = 221761.000
Output saved: /home/g5/Music/structured_asic_project/phase2_greedy/sa_runs/grow_
placement_alpha0.99_beta0.95_T100000_ts1765316855.json
alpha0.99_beta0.95_T100000 finished. Press enter to close...
```



```
Terminal
CLK: 142 cells
oeb_16: 124 cells
in_35: 65 cells
out_0: 2 cells
out_1: 2 cells
out_2: 2 cells
out_3: 2 cells
out_4: 2 cells
out_5: 2 cells

Total occupied sites after seed: 664
=====

===== GROW STAGE =====
Grow stage completed.

HPWL before SA: 528366.000
[SA] start HPWL = 528366.000 T0=100000.0 alpha=0.99 N=2000 p_refine=0.7 W0=1080
.0 beta=0.9
[SA] iter= 1 T=99000.0000 W=972.00 curr=1501490.000 best=528366.000
[SA] iter= 2 T=98010.0000 W=874.80 curr=1672600.000 best=528366.000
[SA] iter= 3 T=97029.9000 W=787.32 curr=1674563.000 best=528366.000
[SA] iter= 4 T=96059.6010 W=708.59 curr=1675731.000 best=528366.000
[SA] iter= 5 T=95099.0050 W=637.73 curr=1697328.000 best=528366.000
[SA] iter= 6 T=94110.0110 W=578.01 curr=1715510.000 best=528366.000
```

Terminal

```
[SA] iter=1657 T=0.0117 W=0.00 curr=206353.000 best=206353.000
[SA] iter=1658 T=0.0116 W=0.00 curr=206345.000 best=206345.000
[SA] iter=1659 T=0.0115 W=0.00 curr=206332.000 best=206332.000
[SA] iter=1660 T=0.0114 W=0.00 curr=206301.000 best=206301.000
[SA] iter=1661 T=0.0112 W=0.00 curr=206301.000 best=206301.000
[SA] iter=1662 T=0.0111 W=0.00 curr=206301.000 best=206301.000
[SA] iter=1663 T=0.0110 W=0.00 curr=206299.000 best=206299.000
[SA] iter=1664 T=0.0109 W=0.00 curr=206273.000 best=206273.000
[SA] iter=1665 T=0.0108 W=0.00 curr=206249.000 best=206249.000
[SA] iter=1666 T=0.0107 W=0.00 curr=206229.000 best=206229.000
[SA] iter=1667 T=0.0106 W=0.00 curr=206210.000 best=206210.000
[SA] iter=1668 T=0.0105 W=0.00 curr=206202.000 best=206202.000
[SA] iter=1669 T=0.0104 W=0.00 curr=206201.000 best=206201.000
[SA] iter=1670 T=0.0103 W=0.00 curr=206198.000 best=206198.000
[SA] iter=1671 T=0.0102 W=0.00 curr=206171.000 best=206171.000
[SA] iter=1672 T=0.0101 W=0.00 curr=206132.000 best=206132.000
[SA] iter=1673 T=0.0100 W=0.00 curr=206102.000 best=206102.000
[SA] finished. best HPWL = 206102.000
Final SA HPWL = 206102.000
Output saved: /home/g5/Music/structured_asic_project/phase2_greedy/sa_runs/grow_
placement_alpha0.99_beta0.9_T200000_ts1765317309.json

alpha0.99_beta0.9_T200000 finished. Press enter to close...
[SA] iter=850 T=194.9465 W=0.00 curr=657559.000 best=651582.000
```