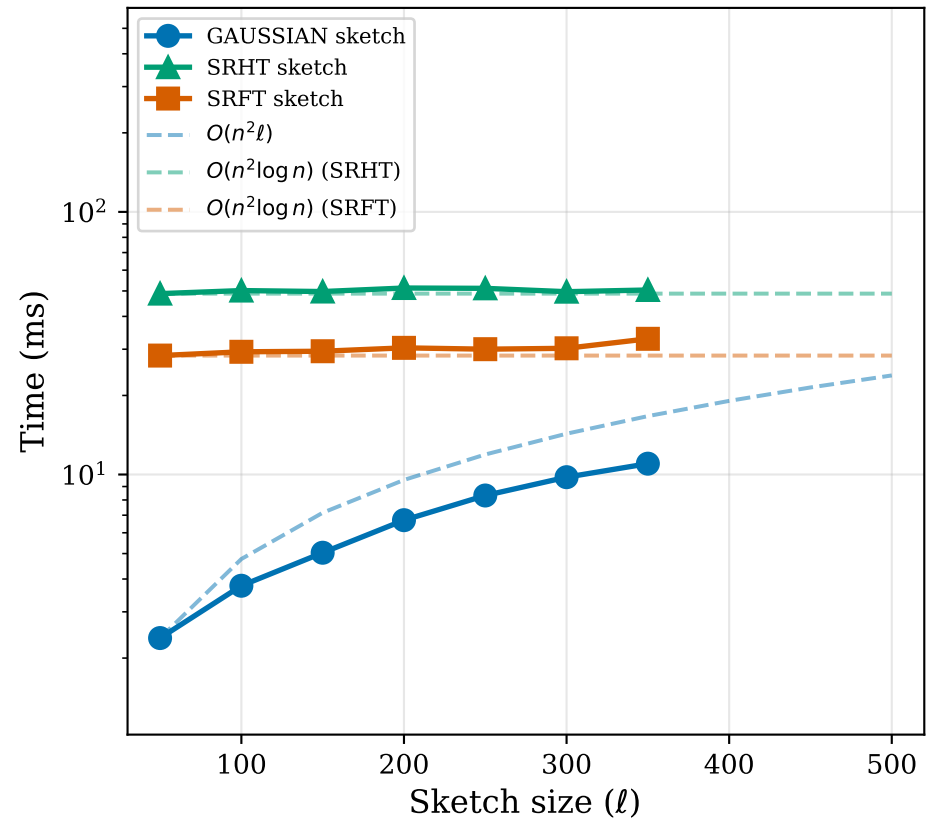**(a) Optimized Implementations**
$n = 2048$

(b) Naive Pure-Python
$n = 2048$

Legend (a):
- GAUSSIAN sketch
- SRHT sketch
- SRFT sketch
- $O(n^2\ell)$
- $O(n^2\log n)$ (SRHT)
- $O(n^2\log n)$ (SRFT)

Legend (b):
- Gaussian
- SRHT (naive)
- SRFT (naive)
- $O(n^2\ell)$
- $O(n^2\log n)$ (SRHT)
- $O(n^2\log n)$ (SRFT)

Axis labels: Time (ms); Sketch size (ℓ)