6.1)

$A = LDL^T = UDU^T$

A_{11} element of LDL^T: $A_{11} = 1 \cdot \delta_1 \cdot 1^T = \delta_1$

A_{11} element of UDU^T: $A_{11} = 1\,\varepsilon_1\,1^T = \varepsilon_1$

A_{11} element of A: $A_{11} = \alpha_{11}$

Combining results, we get $\emptyset_1 = \delta_1 + \varepsilon_1 - \alpha_{11}$

Cost of 1 twisted factorization:

LDL^T:

multiply L and D: $O(n^2)$
+
multiply by L^T: $O(n^2)$
_____
$2n^2$

$UE u^T$:

multiply u and E: $O(n^2)$

+

multiply by u^T: $O(n^2)$

_____

$2n^2$

Equating results, matching terms: $O(n^2)$

total cost: $2n^2 + 2n^2 + n^2 = \boxed{5n^2 \sim O(n^2)}$

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cost for ALL twisted factorizations:

includes each pivot element. if n is the

size of matrix A.

$cost = (n-1) \cdot O(5n^2) = \boxed{5n^3 - 5n^2 \sim O(n^3)}$