Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A \to \left(\begin{array}{c c} A_L & A_R \end{array} \right), C \to \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
3	while $n(A_L) < n(A)$ do
2,3	$ \left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A) $
5a	$\left(\begin{array}{c c} A_L & A_R \end{array}\right) \to \left(\begin{array}{c c} A_0 & a_1 & A_2 \end{array}\right), \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array}\right) \to \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array}\right)$
	where a_1 has 1 column, γ_{11} is 1×1
6	$ \left\{ \begin{array}{c cc} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c cc} A_0^T A_0 + \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
8	$c_0 1 := A_0^T a_1 + \widehat{c}_0 1$ $\gamma_{11} := a_1^T a_1 + \widehat{\gamma}_{11}$
7	$ \begin{cases} \begin{pmatrix} C_{00} & c_{01} & C_{02} \\ c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T A_0 + \widehat{C}_{00} & A_0^T a_1 + \widehat{c}_0 1 & \widehat{C}_{02} \\ \widehat{c}_{10}^T & \widehat{a}_1^T a_1 + \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{pmatrix} $
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$
2	$ \left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$ \left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A)) $
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Step	Algorithm: $C = A^T A + C$	
1a	{	}
4		
	where	
		7
2		
3	while do	
	(7
2,3	$ \langle \rangle $	}
		_
5a		
	where	
C		
6		
		_
8		
7		}
		_
5b		
2		}
	endwhile	_
	chawine characteristics and the characteristics and the characteristics are characteristics.	7
2,3	$\land \neg ($	}
1b		}

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}\}$
4	where
2	
3	while do
2,3	
5a	where
6	
8	
7	
5b	
2	
	endwhile
2,3	$\left \left. \left\{ \right. \right. \right. \right. \right. $
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	where
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
3	while do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge \right.$
5a	where
6	
8	
7	
5b	
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$ \left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg () \right\} $
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}$
4	where
2	$ \left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \right\} $
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	where
6	
8	
7	
5b	
2	$ \left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge \neg (n(A_L) < n(A)) \right\}$
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A o \left(\begin{array}{c c} A_L & A_R \end{array} \right), C o \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is $0 imes 0$
2	$ \left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \right\} $
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	where
6	
8	
7	
5b	
2	$ \left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) $
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A)) $
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	${C = \hat{C}}$
4	$A \to \begin{pmatrix} A_L & A_R \end{pmatrix}$, $C \to \begin{pmatrix} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{pmatrix}$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \right.$
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A) \end{array} \right\}$
5a	$ \begin{pmatrix} A_L \mid A_R \end{pmatrix} \to \begin{pmatrix} A_0 \mid a_1 \mid A_2 \end{pmatrix}, \begin{pmatrix} C_{TL} \mid C_{TR} \\ \hline C_{BL} \mid C_{BR} \end{pmatrix} \to \begin{pmatrix} \widehat{C}_{00} \mid \widehat{c}_{01} \mid \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T \mid \widehat{c}_{11} \mid \widehat{c}_{12}^T \\ \widehat{C}_{20} \mid \widehat{c}_{21} \mid \widehat{C}_{22} \end{pmatrix} $ where a_1 has 1 column, γ_{11} is 1×1
6	
8	
7	
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A)) $
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Step	Algorithm: $C = A^T A + C$
1a	$\{C = \widehat{C}$
4	$A \to \left(\begin{array}{c c} A_L & A_R \end{array} \right), C \to \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
3	while $n(A_L) < n(A)$ do
2,3	$ \left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A) $
5a	$ \left(\begin{array}{c c} A_L & A_R \end{array} \right) \rightarrow \left(\begin{array}{c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \rightarrow \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{c}_{11}^T & \widehat{c}_{12}^T \\ \hline \widehat{c}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
	where a_1 has 1 column, γ_{11} is 1×1
6	$ \begin{cases} \begin{pmatrix} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{pmatrix} = \begin{pmatrix} A_0^T A_0 + \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{pmatrix} $
8	
7	
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \land \neg (n(A_L) < n(A))$
1b	$\left\{ [C] = \operatorname{syrk_ac}(A, \widehat{C}) \right\}$

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A \to \begin{pmatrix} A_L & A_R \end{pmatrix}, C \to \begin{pmatrix} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{pmatrix}$ where A_L has 0 columns, C_{TL} is 0×0
2	$ \left\{ \begin{pmatrix} C_{TL} & C_{TR} \\ C_{BL} & C_{BR} \end{pmatrix} = \begin{pmatrix} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \widehat{C}_{BL} & \widehat{C}_{BR} \end{pmatrix} \right\} $
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A) \end{array} \right\}$
5a	$ \left(\begin{array}{c c} A_L & A_R \end{array} \right) \to \left(\begin{array}{c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \to \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{c}_{11}^T & \widehat{c}_{12}^T \\ \hline \widehat{c}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
	where a_1 has 1 column, γ_{11} is 1×1
6	$ \left\{ \begin{array}{c cc} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right\} = \left(\begin{array}{c cc} A_0^T A_0 + \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
8	
7	$ \left\{ \begin{array}{c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c c} A_0^T A_0 + \widehat{C}_{00} & A_0^T a_1 + \widehat{c}_0 1 & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{a}_1^T a_1 + \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \hline \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) \\ $
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & a_1 & A_2 \end{array} \right), \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$
2	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
	endwhile
2,3	$\left\{ \left(\frac{C_{TL}}{C_{BL}} \left \frac{C_{TR}}{C_{BR}} \right) = \left(\frac{A_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \left \widehat{C}_{BR} \right) \wedge \neg (n(A_L) < n(A)) \right\} \right\}$
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Step	Algorithm: $C = A^T A + C$
1a	${C = \widehat{C}}$
4	$A \to \left(\begin{array}{c c} A_L & A_R \end{array} \right), C \to \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is 0×0
2	$\left\{ \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right)$
3	while $n(A_L) < n(A)$ do
2,3	$\left\{ \begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \wedge n(A_L) < n(A)$
5a	$ \left(\begin{array}{c c} A_L & A_R \end{array} \right) \to \left(\begin{array}{c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \to \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \hline \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
	where a_1 has 1 column, γ_{11} is 1×1
6	$ \left\{ \begin{array}{c cc} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ C_{20} & c_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c cc} A_0^T A_0 + \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \hline \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
8	$c_0 1 := A_0^T a_1 + \widehat{c}_0 1$ $\gamma_{11} := a_1^T a_1 + \widehat{\gamma}_{11}$
7	$ \left\{ \begin{array}{c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right) = \left(\begin{array}{c c} A_0^T A_0 + \widehat{C}_{00} & A_0^T a_1 + \widehat{c}_0 1 & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{a}_1^T a_1 + \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \hline \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right) $
5b	$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$
2	$\left\{ \begin{array}{c c} \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) = \left(\begin{array}{c c} A_L^T A_L + \widehat{C}_{TL} & \widehat{C}_{TR} \\ \hline \widehat{C}_{BL} & \widehat{C}_{BR} \end{array} \right) \end{array} \right.$
	endwhile
2,3	$ \left\{ \left(\frac{C_{TL}}{C_{BL}} \left \frac{C_{TR}}{C_{BR}} \right) = \left(\frac{A_L^T A_L + \widehat{C}_{TL}}{\widehat{C}_{BL}} \left \widehat{C}_{TR} \right \right) \land \neg (n(A_L) < n(A)) \right\} $
1b	$\{[C] = \operatorname{syrk_ac}(A, \widehat{C})$

Algorithm: $C = A^T A + C$	
$A o \left(\begin{array}{c c} A_L & A_R \end{array} \right) , C o \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right)$ where A_L has 0 columns, C_{TL} is $0 imes 0$	
while $n(A_L) < n(A)$ do	
$ \left(\begin{array}{c c} A_L & A_R \end{array}\right) \rightarrow \left(\begin{array}{c c} A_0 & a_1 & A_2 \end{array}\right), \left(\begin{array}{c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array}\right) \rightarrow \left(\begin{array}{c c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array}\right) $ where a_1 has 1 column, γ_{11} is 1×1	
$c_0 1 := A_0^T a_1 + \widehat{c}_0 1$ $\gamma_{11} := a_1^T a_1 + \widehat{\gamma}_{11}$	
$A \to \left(\begin{array}{c c c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c c c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c c c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c c c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$	
endwhile	

Algorithm: $C = A^T A + C$

$$A \to \left(A_L \mid A_R \right), C \to \left(\begin{array}{c|c} C_{TL} \mid C_{TR} \\ \hline C_{BL} \mid C_{BR} \end{array} \right)$$

where A_L has 0 columns, C_{TL} is 0×0

while $n(A_L) < n(A)$ do

$$\left(\begin{array}{c|c|c} A_L & A_R \end{array} \right) \to \left(\begin{array}{c|c|c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c|c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \to \left(\begin{array}{c|c|c} \widehat{C}_{00} & \widehat{c}_{01} & \widehat{C}_{02} \\ \hline \widehat{c}_{10}^T & \widehat{\gamma}_{11} & \widehat{c}_{12}^T \\ \widehat{C}_{20} & \widehat{c}_{21} & \widehat{C}_{22} \end{array} \right)$$

where a_1 has 1 column, γ_{11} is 1×1

$$c_0 1 := A_0^T a_1 + \widehat{c}_0 1$$

$$\gamma_{11} := a_1^T a_1 + \widehat{\gamma}_{11}$$

$$A \to \left(\begin{array}{c|c|c} A_L & A_R \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} A_0 & a_1 & A_2 \end{array} \right) , \left(\begin{array}{c|c|c} C_{TL} & C_{TR} \\ \hline C_{BL} & C_{BR} \end{array} \right) \leftarrow \left(\begin{array}{c|c|c} C_{00} & c_{01} & C_{02} \\ \hline c_{10}^T & \gamma_{11} & c_{12}^T \\ \hline C_{20} & c_{21} & C_{22} \end{array} \right)$$

endwhile