

Computation of LU Factorization

October 2, 2018

Given $A \in \mathbb{R}^{n \times n}$ form $L, U \in \mathbb{R}^{n \times n}$

```
1:  $L \leftarrow I_n$ 
2: for  $i = 1, \dots, n - 1$  do
3:   for  $j = i + 1, \dots, n$  do
4:      $\mu_{ji} \leftarrow -a_{ji}/a_{ji}$ 
5:      $A(j, :) \leftarrow A(j, :) + \mu_{ji}A(i, :)$ 
6:      $l_{ji} \leftarrow -\mu_{ji}$ 
7:   end for
8: end for
9:  $U \leftarrow A$ 
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3:   for  $j = i + 1, \dots, n$  do
4:      $l_{ji} \leftarrow a_{ji}/a_{ii}$ 
5:      $A(j, :) \leftarrow A(j, :) - l_{ji}A(i, :)$ 
6:   end for
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3:   for  $j = i + 1, \dots, n$  do
4:      $l_{ji} \leftarrow a_{ji}/a_{ii}$ 
5:      $A(j, i : n) \leftarrow A(j, i : n) - l_{ji}A(i, i : n)$ 
6:   end for
7: end for
8:  $U \leftarrow A$ 
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