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# Laboratory Notebook

**BEMOSS and Its Enhanced Applications**

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## Friday, March 13, 2018

### 1 Notation

Throughout this document, the vectors (matrices) will be denoted by lowercase (uppercase) bold letters while the lowercase non-bold letters will denote scalar quantities. Sets will be denoted by calligraphic letters. For positive integers  $m, n > 0$ ,  $\mathbb{R}^n$  ( $\mathbb{R}^{m \times n}$ ) denotes  $n$ -dimensional column vector ( $m \times n$ -dimensional matrix) with entries taken from a set of real numbers  $\mathbb{R}$ .  $(\cdot)^T$  denotes the transposition of quantity  $(\cdot)$ . The standard Euclidean norm of the vector  $\mathbf{x} \in \mathbb{R}^n$  and the matrix  $\mathbf{A}$  are given by  $\|\mathbf{x}\| = (\sum_{i=1}^n |x_i|^2)^{1/2}$  and  $\|\mathbf{A}\| = (\sum_{i=1}^m \sum_{j=1}^n |a_{ij}|^2)^{1/2}$  with  $x_i, a_{ij}$  being the entries of  $\mathbf{x}$  and  $\mathbf{A}$ , respectively. The scalar products of quantities  $\mathbf{x}, \mathbf{y} \in \mathbb{R}^n$  and  $\mathbf{A}, \mathbf{B} \in \mathbb{R}^{m \times n}$ , are given by

$$\mathbf{x}^T \mathbf{y} = \sum_{i=1}^n x_i y_i \text{ and } \mathbf{A} \cdot \mathbf{B} = \text{Tr}(\mathbf{A}^T \mathbf{B}) = \text{Tr}(\mathbf{A} \mathbf{B}^T),$$

respectively, where  $\text{Tr}(\cdot)$  is the trace of matrix  $(\cdot)$ . Clearly,  $\text{Tr}(\mathbf{A}^T \mathbf{A}) = \|\mathbf{A}\|^2$ .  
Example of citing a paper. "Authors in [?] ..."



## Monday, May 06, 2019

I emailed Mr. Mattus asking him whether he made any progress on finding a laptop that can be used to demonstrate the installation of BEMOSS.





## Thursday, May 09, 2019

I picked up a department laptop from Mr. Mattus today. He cleared the partition completely, so no time had to be spent removing a previous operating system from the machine. Then, I installed Ubuntu 16.04.6 LTS on the system with a bootable USB flash from the link provided on the BEMOSS installation guide.



## Bibliography

- [1] F. Martinelli. A robot localization system combining rssi and phase shift in uhf-rfid signals. *IEEE Transactions on Control Systems Technology*, 23(5):1782–1796, Sept 2015.