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# Meeting Minutes

**BEMOSS and Its Enhanced Applications**

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Brian Lauer

blauer@mail.bradley.edu

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Notation, [5](#)



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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 [1] ..."





## Friday, April 26, 2019

Dr. Miah will write a research grant proposal under BEMOSS and is due May 3.

All documentation will be maintained in a github repository for this project. I need to create a Github account and send my username to Dr. Miah. A Google Drive with the same name as the Github repository will be created name DocsBEMOSS.

I need to talk to Mr. Mattus about getting a laptop for research. It must be installed with Ubuntu administrative privileges.

Send him an email:

Hello Mr. Mattus, I will be working on a project with Dr. Miah. For that we would like to request a laptop available in the department if possible so that we can install Ubuntu operating system.

Try to go see him in the afternoon.

I need to learn the following Github Bash terminal commands:

`Git add`

`Git commit -m "message"`

`Git remote add origin 'url'`

To get a better understanding of what is going on I need to go through Github tutorials.



## Thursday, May 02, 2019

I met with Reece Bachman, Jordan Ingram, and Robert O'Malley in the lab with the intention of filming a video of the BEMOSS installation from start to finish. However, I misinterpreted Dr. Miah's email and thought we were going to install on the current laptop they have in the lab. Instead, I was expected to have received one from Mr. Mattus with Ubuntu installed. Robert showed me the motor setup with the Zigbee module, L298N dual H bridge module, and buck-boost converter. Later, Jordan demonstrated his work with the HVAC controller.



## Friday, May 03, 2019

I still am in need of a laptop, so I must email Mr. Mattus once again on Monday, May 6.

Dr. Miah showed me some of the Github commands to upload `tex` and `pdf` files to the Github repo. We added the meeting minutes files `meeting.tex` and `meeting.pdf`.



## Friday, May 10, 2019

Today, I met with Bob and Jordan to film the installation of BEMOSS on my borrowed laptop. After Bob attempted to install BEMOSS twice, he came to the conclusion that I installed the wrong version of Ubuntu on my machine. BEMOSS requires 16.04.5 not 16.04.6 that I had installed before the first installation. After another attempt at installing the software on Ubuntu 16.04.5, the same issue persisted involving three python modules not installing.





## 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. [7](#)