K-MAKS Protocol for Data Transfer Group 20: Aneeg Qayyum, Kevin House, Rex Jin, Xiyu Chen, and Ysabel Yao

Introduction

K-Maks is a project that has been initially by Rowing Canada Aviron. It seeks to produce a sist in impro-educational tool for rowers to assist in improoverall technique and performance.

- The device is an on-board data logger that multiple sensors to log the stroke quality motion of the boat [1].
- An accelerometer and GPS log the accel position of the boat.

Project Goals



Figure 1. The flow of information

The goal of this project is to develop the int protocol to allow for easy transfer off data connection onto secondary computer as sho Figure 1. the project will be undertaken with following goals:

- The **front-end software** must be easy to to use for the primary user base
- The software will cross-platform and usal computer with different operating system
- Data transfer between the MCU and hose must be reliable; information should not corrupted during the transfer process
- The users should have ability to remove : the SD card, and if the storage space on t depleted, the oldest files should be autom erased to create space for new files.

	GUI						
developed uce an roving	Please select folder : Folder menu with name Please select file: file menu with name Vitalization						
at utilizes based on	Image frame (with graph) chart frame (with chatr)						
eration an							
	Please select image: image menu with name Delete folder Delete file						
D CARD	Figure 2. Draft Diagram of GUI						
99 Project	Methodology						
[1]	• Storage Library: SD library is a standard library that comes with Arduino IDE. The library provides a simple to use interface for SD card initialization, reading to and writing from files.						
ternal via USB own in th the	• Serial Communication: the actual serial communication aspect is already provided by the Arduino library.						
install and able on	• Graphical User Interface (GUI): the user interface is designed to convenience non technical people who can modify and download the SD card contents. The diagram of GUI shown in Figure 2.						
st computer be lost or files from the card is natically	• Data Format: the data should be pre-read and standardize the format according to the data uploaded from the device to the host.						

A V		Transfe	- CUI						
ΨN	mask Data	iransie	1001						
	Select th	e Folde	er :		20210730	-	5	Select the	e File :
		_			AccY	vs. Time	9		
	0.04	-						-	- Accì
	0.02	-							
	Acc∕ Acc∕	_							
	-0.02	-							
	-0.04	-							
		0.00	0.25	0.50	0.75 Tim	1.00 ie(Min)	1.25	1.50	1.75
	Select th	e Imag	e :	AccY_v	_Time.pn	g	~		
						<u>.</u>			

- with invalid arguments.
- chose folder or files.

The software system for interacting with the device was developed successfully. Users able to plug the device in $P\bar{C}$ and review, save and delate data. The graph the generated from the data file is more intuitive to users.



								- U
	1							
23_58_22	-			Virtu	alization			
	Time	Velocity	Stroke Ra	AccX	AccY	AccZ	Lat/DD	Lon/DD
1	1.84	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
2	2.88	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
3	3.91	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
4	4.94	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
5	5.97	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
6	6.70	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
7	7.40	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
8	8.73	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
9	9.11	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
10	9.14	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
11	9.18	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
12	9.21	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
13	9.24	0.00	0.00	0.0	0.0	1.0	0.000000	0.000000
2707 .	<	200					a	

Figure 3. GUI Window for Users

• MCU: Error handling condition reported to user; argument buffer handling; having valid command

• **GUI**: The window will shown if users do not plug in the device correctly; the system will show the initial window and users can chose files from MCU; users can chose the file and click "Virtualization" button to generate related graphs; users can chose "save" file to local address, "delete" file in the SD card. The users will also get reminder if they do not

Conclusion

Reference

Rowing Canada Aviron, "K-Maks Protocol for Data Transfer". [Accessed: 30-July-2021]