Communication

1 Server

The server is written in Java. It is responsible for:

- Acting as a server the app can connect to.
- Acting as a client that can connect to the MOPED.
- Receive data via TCP sockets.
- Handling all communication between all parts of the system.
- Calculations for ACC.
- Handle Image Recognition for platooning.
- Store and handle data.

2 Communication Protocol

From	**To**	**Include**	**Type**
App	Server	Velocity: -100 - 100 (int) Handling: -100 - 100 (int) ACC: true/false Platooning: true/false Speed: -100 - 100	JSON Object
Server	App	Successful connection to app: “Send over data”.	String
Server	App	After receiving data: “Data received”.	String
Server	App	MOPED disconnected: “Connection to moped lost”.	String
Moped	Server	inspeed_avg: can_ultra: front sensor distance (double) can_speed: engine power (double) timestamp: current time (long)	JSON Object
Moped	Server	Image file	File
Server	Moped	Velocity: -100 - 100 (int) Handling: -100 - 100 (int) ACC: true/false Platooning: true/false Speed: -100 - 100	JSON Object
Server	Moped	App disconnected: Velocity: 0 (int)	JSON Object

		Handling: 0 (int) ACC: false Platooning: false Speed: 0	

3 Error Handling

Error	Handling	Used files	Tested
Moped disconnected	Server throws IOException, sends a “connection lost” message to the app. Server needs to be restarted to establish a new connection. MOPED will recognise loss of connection; the MOPED stops capturing pictures, sending data and files, and stops the MOPED.	MopedDataConnection AppConnection Start PythonServer.py FileServer.py CameraMock.py	Yes
Server shut down	MOPED will recognise loss of connection; the MOPED stops capturing pictures, sending data and files, and stops the MOPED. The app returns to the connect page.	PythonServer.py FileServer.py CameraMock.py Model	Yes
Network turned off	MOPED will recognise loss of connection; the MOPED stops capturing pictures, sending data and files, and stops the MOPED. The MOPED waits until a new network connects.	PythonServer.py FileServer.py CameraMock.py	Yes

App put in background	App pauses and sends 0 values to the server until user unpauses it. MOPED is unaffected.		Yes
App crashes/disconnects	Server throws IOException, sends 0 values to the moped so that it does not keep driving. Server then waits for a new connection.	AppConnection Start	Yes