User Requirement in Software perspective (Team 5)

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- Empty - Functional, NF - Non Functional, I - Implementation, D - Delivery, S - Security

ID	Req	Cat.
Title	Project Overview	
Req1	The system you must secure and features to is an embedded face recognition system running on a Jetson Nano processor that utilizes CUDA and a windows C++ or Java control and display application.	NF/I
Req2	● Control/Display application can be written in C++ or Java (your choice)	NF/I
Req3	● Apply concepts taught in the classroom	NF/I
Req4	● Ensure application architecture is secure	NF/S
Req5	● Ensure code is written and implemented in a secure manner	NF/S
Req6	● Ensure application network communication is secure	NF/S
Req7	● Practice finding security flaws in code / applications both statically and dynamically	NF/S
Title	Project Description	

Comment	picture description)
	`[Jetson] <-TCP/UDP-> (Network) <-TCP/UDP-> [App] -> Display`
	`|-> Controller`	

Comment	● Jetson Nano uses its camera to collect and analyze image frames using AI to perform face detection and recognition	
Comment	● After an image frame has been analyzed the image frame along with additional amplifying information from the analysis will be transmitted to the user display and system control application	
Comment	The user display and system control application is responsible for the following:	
Req8	1. Establishing secure and authenticated communication with the camera and image analysis application and user interface when secure mode is selected or requested.	

Req9	2. Provides the user interface to control the system. User Interface shall support the following modes of operation:	
Req10	a) Secure or non secure mode of communication	
Req11	b) Learning Mode - User images can be added to the image database. In this mode the interface should query for the name of the person in front of the camera and the number of samples to be collected.	
Req12	c) Run Mode – System utilizes camera to identify faces and perform facial recognition.	
Req13	d) Test Run Mode – System utilizes a video file to identify faces and perform facial recognition.	
Comment	3. Communicating with the camera and image analysis application as specified.	
Comment	4. Display image frames and any accompanying amplifying analysis information received from the camera and image analysis application in the format specified.	
Title	Project Responsibilities	
Req14	1. Implementing the specified enhancements to the applications.	NF/I
Req15	2. Ensuring that all software in both applications are architected and coded to be secure and free of vulnerabilities.	NF/S
Req16	3. Modifying the implementation so the applications support two modes of communications: 1) a secure mode with all data properly encrypted (including authentication) and 2) a plain text mode without encryption.	
Req17	4. Proper fault/error detection, recovery, and reporting.	
Req18	5. Analyzing the provided initial implementation for vulnerabilities and developing solutions to mitigate.	NF/S
Req19	6. Analyze another team's implementation assigned to you for security flaws and vulnerabilities.	NF/D
Title	Hardware	
Req20	● Jetson Nano with Camera, Wi-Fi hardware, fan and case	NF/I
Req21	● Micro USB Cable	NF/I
Req22	● 64 GB sd card	NF/I

Req23	● Power Supply 5v 4a	NF/I
Req24	● TP-Link AC-1750 Mesh Wi-Fi Router	NF/I
Title	System Software	
Req25	● Windows OS 10 running on a laptop (Laptop)	NF/I
Req26	● Microsoft Visual Studio Community Addition (download from Microsoft)	NF/I
Req27	● JDK (Laptop)	NF/I
Req28	● Open CV - 4.5.1-vc14_vc15 (Laptop and Jetson Nano)	NF/I
Req29	● Putty (Laptop)	NF/I
Req30	● WinSCP(Laptop)	NF/I
Req31	● Linux OS (Jetson Nano)	NF/I
Req32	● GNU C++(Jetson Nano)	NF/I
Req33	● Dlib (Jetson Nano)	NF/I
Req34	● Jetson Utils(Jetson Nano)	NF/I
Title	Sample/Demo Code	
Comment	● C++ Embedded AI & CUDA based Face Detection and Recognition Demo Software that uses a camera and video file(Jetson)	
Comment	● C++ TCP image viewer (laptop and Jetson)	
Comment	● Java TCP image viewer (laptop and Jetson)	
Comment	● You may use your laptops to assume various roles in your system in anyway you like	
Comment	● You may use 3rd party, open-source SW, but please check with the owner (course instructor).	
Comment	● Only C++ or Java (option for the control / display application) programming language should be used.	
Title	Deliverables	

Req35	Each team will develop a presentation that covers the following topics	NF/D
Req36	1. Application Demonstration	NF/D
Req37	2. Technologies utilized.	NF/D
Req38	3. How the systems is architected and coded to ensure it is secure and free of vulnerabilities.	NF/D
Req39	4. How fault/error detection, recovery, and reporting is designed and implemented.	NF/D
Req40	5. Defects and vulnerabilities discovered in the initial implementation and the solutions to mitigate.	NF/D
Req41	6. Defects and vulnerabilities that the team uncovered when analyzing another team’s implementation.	NF/D
Req42	7. Approach to minimizing defects when developing code.	NF/D
Req43	8. Lessons learned.	NF/D