Aung Myin Kyaw (Max) weekly Research Progress Report

Date : 01/09/2018 to 14/09/2018

- **Scope of the work:**
  - ✓ **Programming own application for CS100 spectrometer**

➢ Research Progress in last week

- ✓ After troubleshooting a few weeks for CS100Demo.exe, I have decided to write my own program from the sketch. This is because there is no significant progress while troubleshooting the demo file. The different issues lies in the previous programmer where declarations and syntax are not consistent. In addition, since the codes are not properly comment it is hard to understand what different codes are for. Thus, I have decided to experiment and execute my own program.
- ✓ To start experimenting I have to understand the different functions that Thorlabs has pre coded in the library. There are a total of 26 functions or methods. These methods can be found in the manual TLCCS.html
- ✓ However, there are difficulties I face in making sense of the description written as most of them are written for labview. As for last week I have test and experiment 4 functions - tlccs_startScan, tlccs_getScanData, tlccs_identificationQuery and tlccs_init.

Hierarchical Function Index

- **tlccs_init**
- **Configuration Functions**
  - **tlccs_setIntegrationTime**
  - **tlccs_getIntegrationTime**
- **Action/Status Functions**
  - **tlccs_startScan**
  - **tlccs_startScanCont**
  - **tlccs_startScanExtTrg**
  - **tlccs_startScanContExtTrg**
  - **tlccs_getDeviceStatus**
- **Data Functions**
  - **tlccs_getScanData**
  - **tlccs_getRawScanData**
  - **tlccs_setWavelengthData**
  - **tlccs_getWavelengthData**
  - **tlccs_getUserCalibrationPoints**
  - **tlccs_setAmplitudeData**
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- **Utility Functions**
  - **tlccs_identificationQuery**
  - **tlccs_revisionQuery**
  - **tlccs_reset**
  - **tlccs_selfTest**
  - **tlccs_errorQuery**
  - **tlccs_errorMessage**
  - **tlccs_setUserText**
  - **tlccs_getUserText**
  - **tlccs_setAttribute**
  - **tlccs_getAttribute**
- **tlccs_close**

Different methods defined in the library

➢ Research Progress in last week

- tlccs_identificationQuery

CCS100.identificationQuery(new StringBuilder(256), new StringBuilder(256), new StringBuilder(256), new StringBuilder(256), new StringBuilder(256));

Purpose - This function returns the device identification information.

- tlccs_startScan

CCS100.startScan();

Purpose - This function triggers the the CCS to take one single scan.

➢ Research Progress in last week

- tlccs_init

TLCCS tLCCS = new TLCCS(Resource_Name, true, true);

Purpose - This function initializes the instrument driver session and performs the following initialization actions:

(1) Opens a session to the Default Resource Manager resource and a session to the specified device using the Resource Name specified.
(2) Performs an identification query on the instrument.
(3) Resets the instrument to a known state.
(4) Sends initialization commands to the instrument.
(5) Returns an instrument handle which is used to distinguish between different sessions of this instrument driver.

Notes:

(1) Each time this function is invoked a unique session is opened.

➢ Research Progress in last week

- tlccs_getScanData

CCS100.getScanData(Data);

Purpose - This function reads out the processed scan data.
Note: When the raw scan data is overexposed, so that a proper data processing is not possible, the function returns VI_ERROR_SCAN_DATA_INVALID and all data points are set to zero (0.0).

➢ Research Plan for next week

❖ Understanding the remaining functions and testing out different purposes.