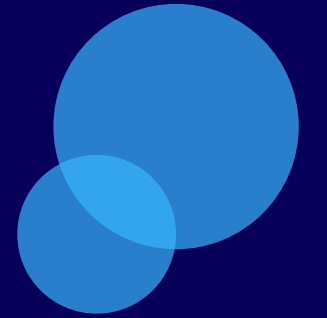


PORTFOLIO

HARRY WANG

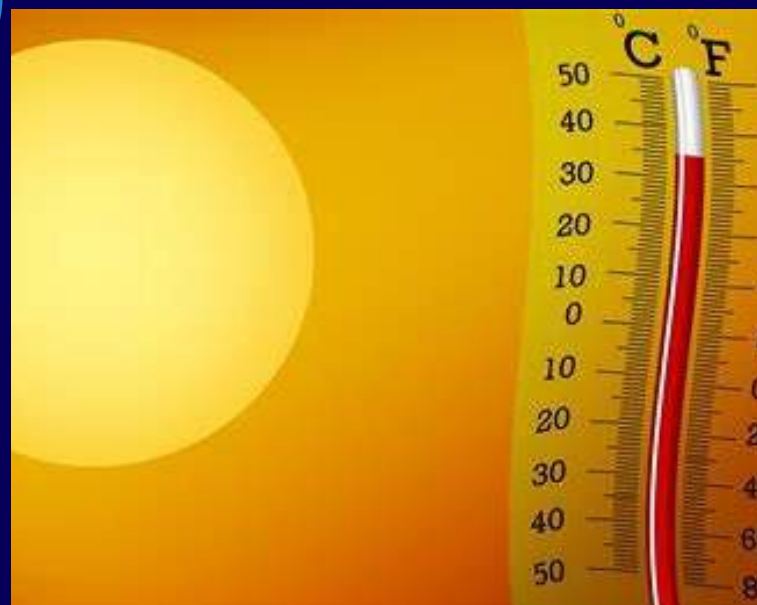
PROJECTS



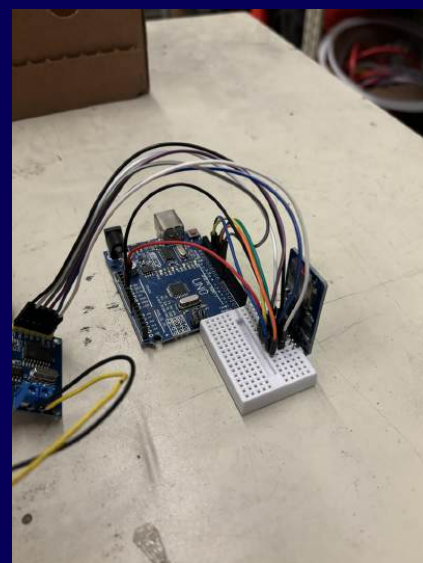
- QuantSpot Software Updates
- Python



- Personal Website
-HTML, CSS, JavaScript



- Heat Wave Sensors
- C++



- UWaterloo Baja SAE Design Team Electrical Team
Projects - Data Acquisition and Wire Harness



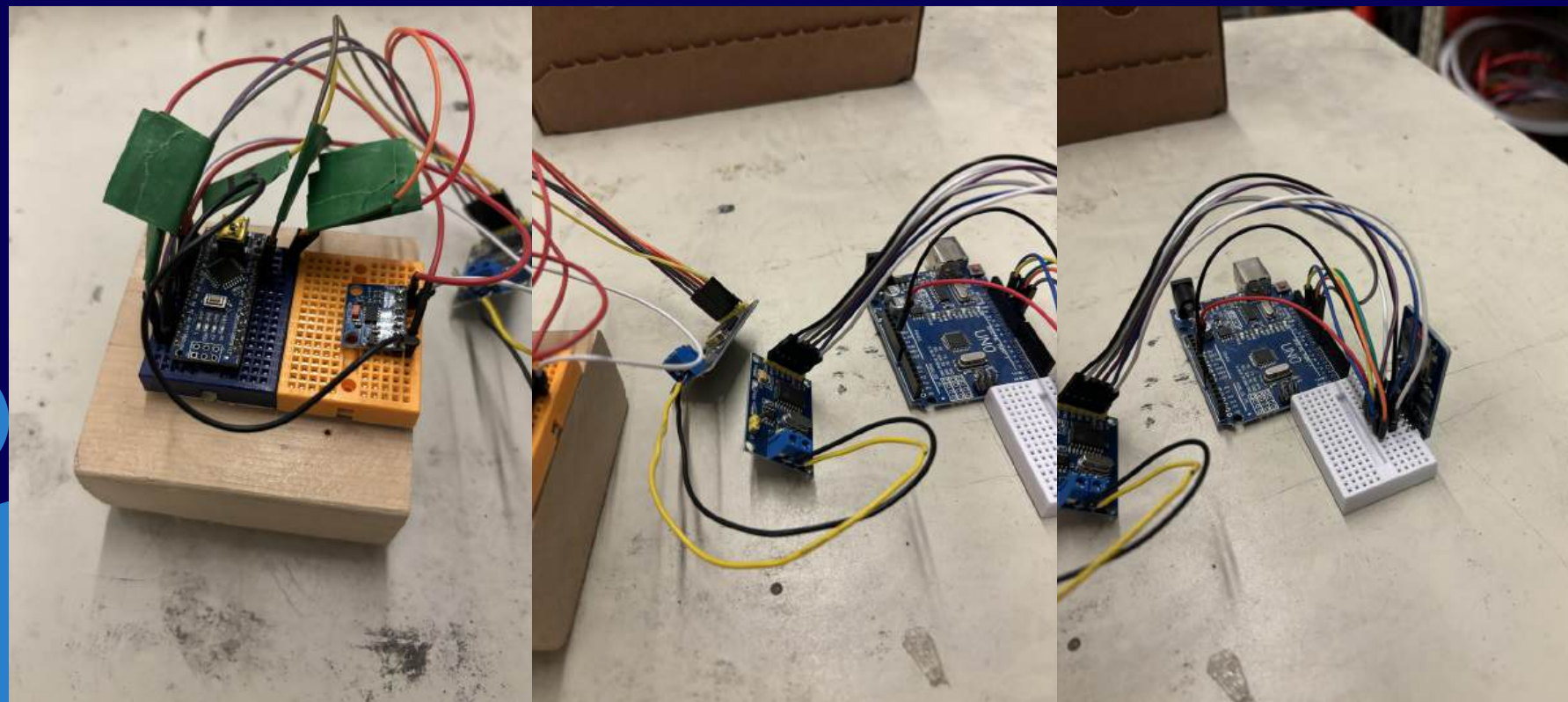
- Python Gui data
collection with BMS
interface through
Aurix Board

UNIVERSITY OF WATERLOO BAJA SAE DESIGN TEAM

C++, ARDUINO, STM32

Purpose

- Design CAN communicating system that incorporates acceleration and rotation sensor that helps mechanical team with suspension, turn radius, etc.
- Designed 18 volt, 60mA buck boost converter than regulates drill bit voltage and allowed for easier changing of batteries



- Wire a harness that connects pressure sensors to a brake light and differential switch as well as kill switches to the engine

HEAT WAVE SENSOR

C++, STM 32, BMP180, DHT11, LCD DISPLAY

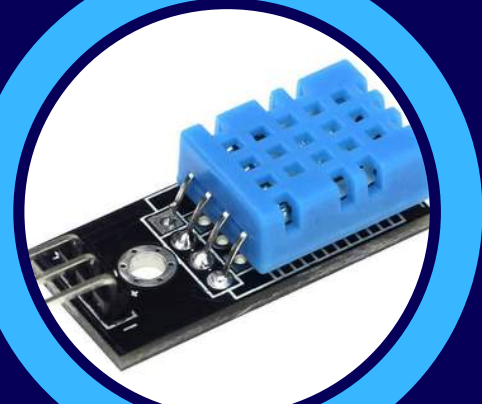
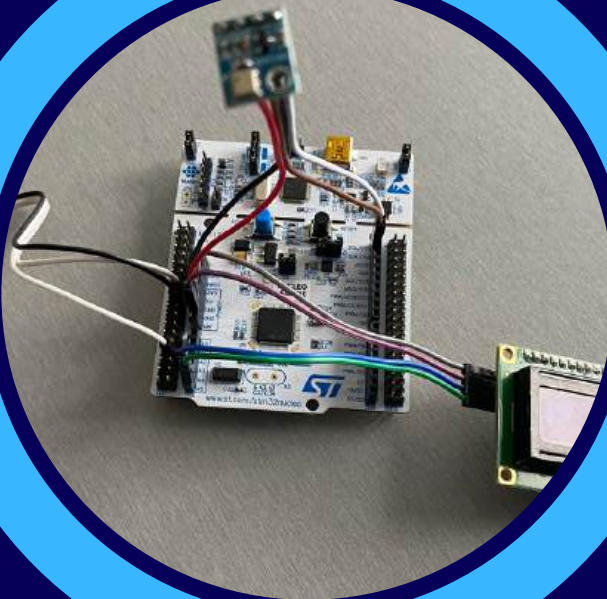
Customer Problem

- Due to the rise of heat waves over the last few decades, it is necessary that areas that experience the highest amount of heat waves be able to detect them in advance

10%

Solution

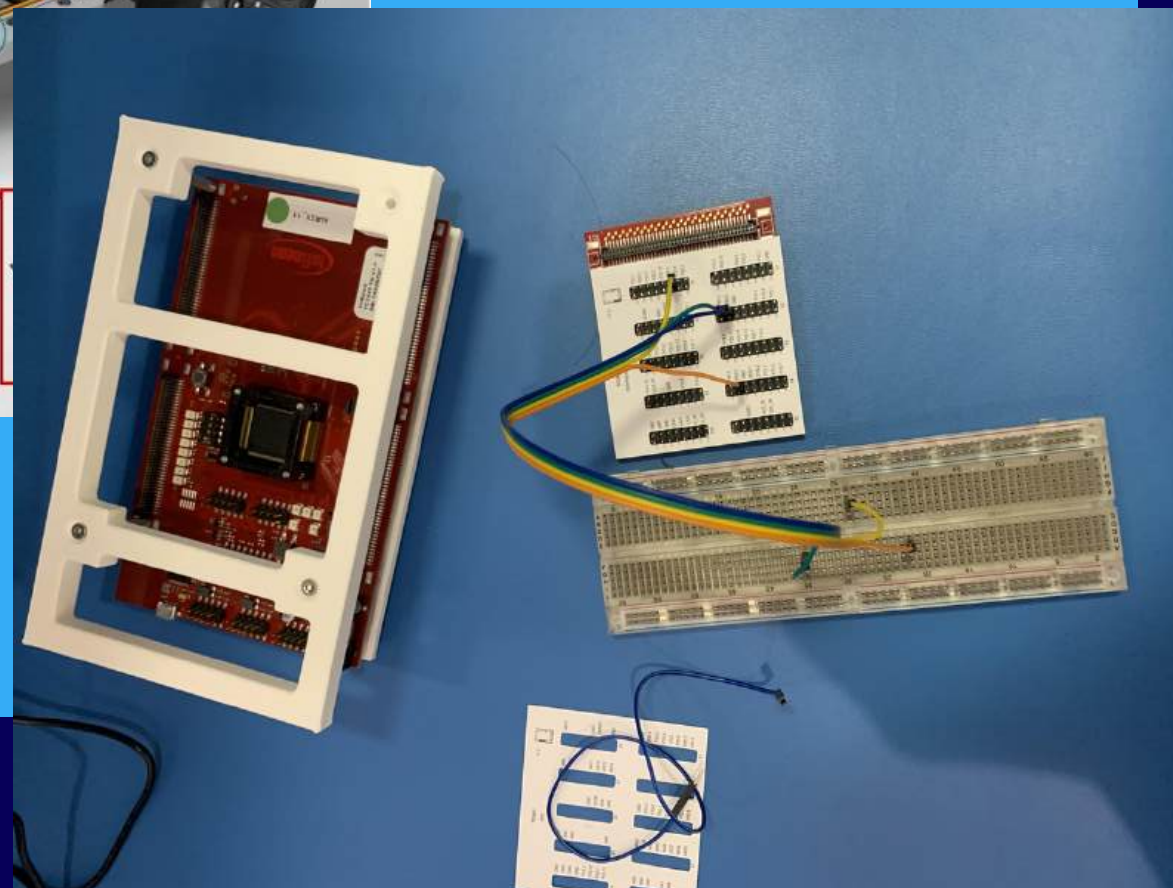
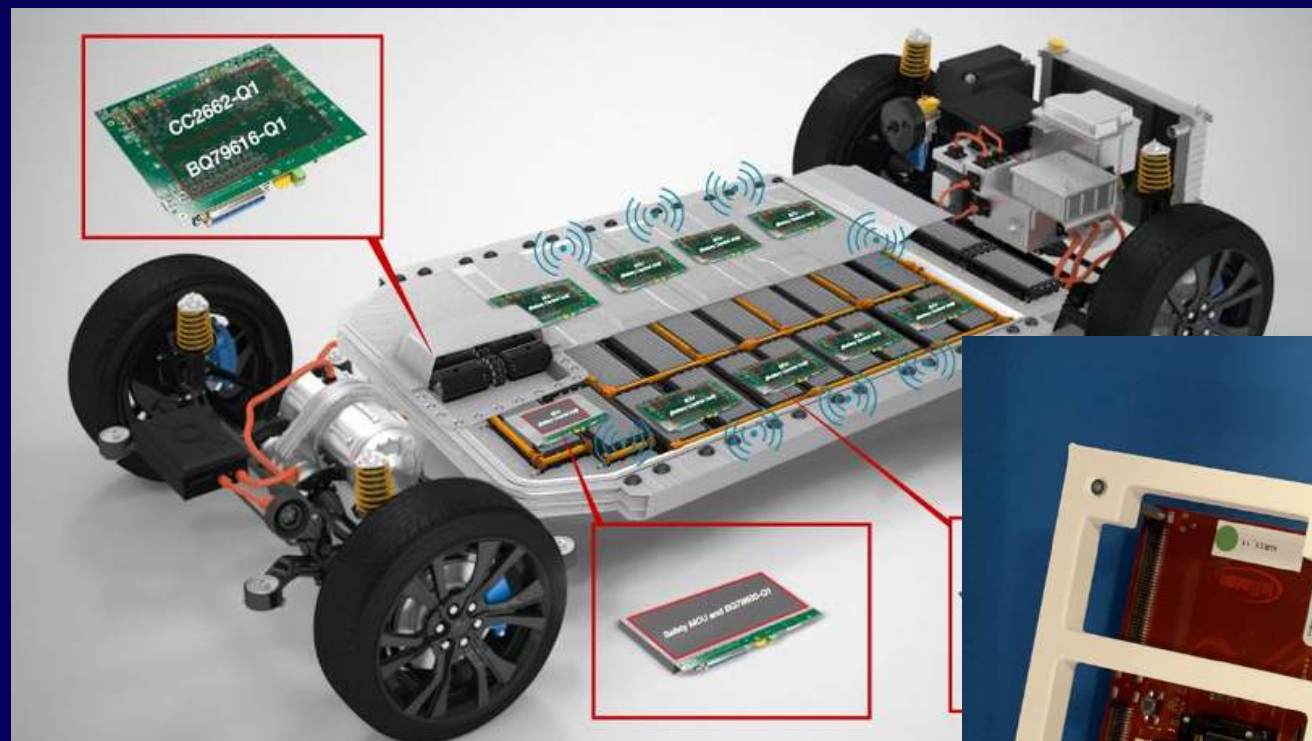
- Coded C++ for the STM32 and wired sensors and LCD displays to detect humidity and temperature changes in the air
- Display live changes of humidity and temperature levels directly onto the display
- Soldered parts of the display and sensor to increase stability of the entire sensor setup



```
Currency  FirstCurrencyConverterApp  ContentView  stm32.conf.h.cpp  stm32.msp.c.cpp
C:\Users\19134\Desktop>Waterloo>ECE 150>Big Projects>ECE 198 Sensor Code>stm32.conf.h.cpp
126 #if defined (LSE_VALUE)
127 #define LSE_VALUE 32768U /*< Value of the External low Speed oscillator in Hz */
128 #endif /* LSE_VALUE */
129
130 #if defined (LSE_STARTUP_TIMEOUT)
131 #define LSE_STARTUP_TIMEOUT 5000U /*< Time out for LSE start up, in ms */
132 #endif /* LSE_STARTUP_TIMEOUT */
133
134 /**
135  * @brief External clock source for I2S peripheral
136  * This value is used by the I2S HAL module to compute the I2S clock source
137  * frequency, this source is inserted directly through I2S_CKIN pad.
138  */
139 #if defined (EXTERNAL_CLOCK_VALUE)
140 #define EXTERNAL_CLOCK_VALUE 12288000U /*< Value of the External audio frequency in Hz*/
141 #endif /* EXTERNAL_CLOCK_VALUE */
142
143 /* Tip: To avoid modifying this file each time you need to use different HSE,
144  * you can define the HSE value in your toolchain compiler preprocessor. */
145
146 /* ===== System Configuration ===== */
147 /**
148  * @brief This is the HAL system configuration section
149  */
150 #define VDD_VALUE 3300U /*< Value of VDD in mV */
151 #define TICK_INT_PRIORITY 15U /*< tick interrupt priority */
152 #define USE_RTOS 0U
153 #define PREFETCH_ENABLE 1U
154 #define INSTRUCTION_CACHE_ENABLE 1U
155 #define DATA_CACHE_ENABLE 1U
156
157 #define USE_HAL_ADC_REGISTER_CALLBACKS 0U /*< ADC register callback disabled */
158 #define USE_HAL_CAN_REGISTER_CALLBACKS 0U /*< CAN register callback disabled */
159 #define USE_HAL_CEC_REGISTER_CALLBACKS 0U /*< CEC register callback disabled */
160 #define USE_HAL_CRYPT_REGISTER_CALLBACKS 0U /*< CRYPT register callback disabled */
```

PYTHON GUI FOR AURIX, STM32, AND BMS INTERFACE

PYTHON



Problem

- Litens Automotive Group strives to ensure the quality of all products manufactured, shipped and used by customers. Throughout my Co-Op term, I code and tested a python GUI to do just that

Solution

- Optimize automotive part testing by coding a python GUI and interfacing it with Aurix Board and STM32
- Write test code in C++ in STM32 IDE and connecting with python GUI to ensure quality and accuracy of the GUI

(Couldn't Show Code Due to Contract Reasons as code was used following the completion of my co-op term)


```
index.html JS appjs X # styles.css
JS appjs > ...
1 const menu = document.querySelector('#mobile-menu');
2 const menuLinks = document.querySelector('.navbar__menu');
3 const navLogo = document.querySelector('#navbar__logo');
4
5 // Display Mobile Menu
6 const mobileMenu = () => {
7   menu.classList.toggle('is-active');
8   menuLinks.classList.toggle('active');
9 };
10
11 menu.addEventListener('click', mobileMenu);
12
13 // Show active menu when scrolling
14 const highlightMenu = () => {
15   const elem = document.querySelector('.highlight');
16   const homeMenu = document.querySelector('#home-page');
17   const aboutMenu = document.querySelector('#about-page');
18   const servicesMenu = document.querySelector('#services-page');
19   let scrollPos = window.scrollY;
20   // console.log(scrollPos);
21
22   // adds 'highlight' class to my menu items
23   if (window.innerWidth > 960 && scrollPos < 600) {
24     homeMenu.classList.add('highlight');
25     aboutMenu.classList.remove('highlight');
26     return;
27   } else if (window.innerWidth > 960 && scrollPos < 1400) {
28     aboutMenu.classList.add('highlight');
29     homeMenu.classList.remove('highlight');
30     servicesMenu.classList.remove('highlight');
31     return;
32   } else if (window.innerWidth > 960 && scrollPos < 2345) {
33     servicesMenu.classl
34     aboutMenu.classlist
35     return;
36   }
37
38   if ((elem && window.i
39     elem.classList.remo
40   );
41
42 window.addEventListener
43 window.addEventListener
```

```
index.html X JS appjs # styles.css
index.html X HTML > body
52 <!-- About Section -->
53 <div class="main" id="about">
54   <div class="main__container">
55     <div class="main__img--container">
56       
57     </div>
58     <div class="main__content">
59       <h1>Who Am I?</h1>
60       <h2>Harry J Wang</h2>
61       <p>I am a First Year Computer Engineering Student at the University of Waterloo interest
62       <p>
63       <h3> Contact Me At:</h3>
64       <h4> Email: harryjwang04@gmail.com</h4>
65       <h4> Phone: (437)-214-2861</h4>
66       <h4> LinkedIn: https://www.linkedin.com/in/harry-j-wang/</h4>
67     </div>
68   </div>
69 </div>
70
71
72 <!-- Experiences Section -->
73 <div class="services" id="services">
74   <h1>Prior Work Experience</h1>
75
76   <div class="services__wrapper">
77     <div class="services__card">
78       <p></p>
79       <p></p>
80       <h2>SQI Diagnostics Inc.</h2>
81       <h2> Software Engineer Co-Op</h2>
82       <p>1. Made Quantispot Software updates that allowed users to customize locations of the wells for specific patients and provid
83       <p>2. Coded a new software that increased efficiency of barcode scanning for manufacturing team by 10% while they were kitting
84       <button class="main__btn"><a href="https://sqidiagnostics.com"> Explore Science </a></button>
85     </div>
86     <div class="services__card">
87       <p></p>
88       <p></p>
89       <h2>HLA Volleyball Club Assistant Coach</h2>
90       <p>Was an assistant coach that lead a 14u girls volleyball team to Nationals (2021 and 2022) in two consecutive years in Las
91       <p>Also created a website for the team that included information such as coach contacts, tryout dates, etc.</p>
92       <p></p>
93       <button class="main__btn"><a href="https://www.facebook.com/HLA.Volleyball"> Explore Coaching </a></button>
94     </div>
95   </div>
96 </div>
```

```
index.html JS appjs # styles.css 9+ X
# styles.css > #navbar__logo
557
558 .services__card button {
559   color: #fff;
560   padding: 14px 24px;
561   border: none;
562   outline: none;
563   border-radius: 4px;
564   background: #131313;
565   font-size: 1rem;
566 }
567
568 .services__card button:hover {
569   cursor: pointer;
570 }
571
572 .services__card:hover {
573   transform: scale(1.075);
574   transition: 0.3s ease-in;
575   cursor: pointer;
576 }
577
578 @media screen and (max-width: 1300px) {
579   .services__wrapper {
580     grid-template-columns: 1fr 1fr;
581   }
582 }
583
584 @media screen and (max-width: 768px) {
585   .services__wrapper {
586     grid-template-columns: 1fr;
587   }
588 }
589
590 /* Footer CSS */
591 .footer__container {
592   background-color: #131313;
593   padding: 5rem 0;
594   display: flex;
595   flex-direction: column;
596   justify-content: center;
597   align-items: center;
598 }
599
600 #footer__logo {
```



PORTFOLIO WEBSITE HTML, CSS, JAVASCRIPT

PERSONAL WEBSITE SHOWCASES WORK AND LEADERSHIP EXPERIENCE

- Created a website that showcases all my work experience and leadership experience throughout my life
- Created interactive buttons that move the page to different locations in the page as well as new pages
- Coded a navigation bar that moves according to the user's location on the page
- Designed the colors on the page to create color gradients



What Else Makes Me Unique?
LEADERSHIP

- Two Year Varsity Tennis Captain
- Four Year Blue Valley District Student Advisory Council Board Member
- Vice President of Blue Valley North High School's National Honor Society
- Two Year Section leader for Blue Valley North High School's Band

Contact Me



SQI DIAGNOSTICS INC.

PYTHON

PROJECT FOR SQI DIAGNOSTICS INC. MANUFACTURING TEAM

10%

```
C:\Users\harry> OneDrive > Desktop > Waterloo Engineering > Slide Projects > SQI Code > SpotsLayout.py > Ui_Frame > setupUi
14 from PyQt5 import QtCore, QtWidgets
15
16
17 class Ui_Frame(QtWidgets.QDialog):
18     def setupUi(self, spotsLayout):
19         self.spotsLayout = spotsLayout
20
21         self.setObjectName("Frame")
22         self.resize(1300, 600)
23
24         self.table = QtWidgets.QTableWidget(self)
25         self.table.setGeometry(QtCore.QRect(10, 10, 1300, 450))
26         self.table.setCornerButtonEnabled(False)
27         self.table.setObjectName("tableView")
28         self.table.setRowCount(spotsLayout.shape[0])
29         self.table.setColumnCount(spotsLayout.shape[1])
30         for i in range(spotsLayout.shape[0]):
31             for j in range(spotsLayout.shape[1]):
32                 self.table.setItem(i,j, QtWidgets.QTableWidgetItem(spotsLayout[i,j]))
33         self.table.itemChanged.connect(self.itemChangedEvent)
34
35
36         self.buttonBox = QtWidgets.QDialogButtonBox(self)
37         self.buttonBox.setGeometry(QtCore.QRect(400, 550, 400, 40))
38         self.buttonBox.setOrientation(QtCore.Qt.Horizontal)
39         self.buttonBox.setStandardButtons(QtWidgets.QDialogButtonBox.Ok)
40         self.buttonBox.setObjectName("buttonBox")
41         self.buttonBox.accepted.connect(self.accept)
42
43         self.retranslateUi(self)
44         QtCore.QMetaObject.connectSlotsByName(self)
45
46     def retranslateUi(self, Frame):
47         _translate = QtCore.QCoreApplication.translate
48         Frame.setWindowTitle(_translate("Frame", "Spots Layout"))
49
50     def itemChangedEvent(self, item : QtWidgets.QTableWidgetItem):
51         previousSpotLabel = self.spotsLayout[item.row(), item.column()]
52         self.spotsLayout[item.row(), item.column()] = item.text()
53         self.table.itemChanged.disconnect(self.itemChangedEvent)
54         for oldSpot in self.table.findItems(previousSpotLabel, QtCore.Qt.MatchExactly):
55             self.spotsLayout[oldSpot.row(), oldSpot.column()] = item.text()
56             self.table.setItem(oldSpot.row(),oldSpot.column(), QtWidgets.QTableWidgetItem(item.text()))
57         self.table.itemChanged.connect(self.itemChangedEvent)
```

```
election View Go Run Terminal Help ← → Search
# styles.css 9+ • MainWindow.py 9+
> harry > OneDrive > Desktop > Waterloo Engineering > Slide Projects > SQI Code > MainWindow.py > ...
def retranslateUi(self, MainWindow):
    _translate = QtCore.QCoreApplication.translate
    MainWindow.setWindowTitle(_translate("MainWindow", "MainWindow"))
    MainWindow.setToolTip(_translate("MainWindow", "<html><head/><body><p>Number of PDCs used to print</p></body></html>"))
    self.analyzeButton.setText(_translate("MainWindow", "Analyze"))
    self.settingsButton.setText(_translate("MainWindow", "Settings"))
    self.progressLabel.setText(_translate("MainWindow", "Analyzing..."))

def analyze(self):
    self.analyzeButton.setDisabled(True)
    self.settingsButton.setDisabled(True)
    print('Analyze')
    folderpath = QtWidgets.QFileDialog.getExistingDirectory(None, 'Select Folder')
    if folderpath == "":
        print("no folder chosen")
    else:
        print(folderpath)
        settings = QtCore.QSettings('SQI Diagnostics', 'Array Assessor')
        self.show_progress_layer()
        # %Reading the config file
        runID = os.path.split(folderpath)[-1]
        with open(folderpath + '/' + runID + '_TgtPos.txt', newline='') as csvfile:
            config = list(csv.reader(csvfile, delimiter=';'))
            csvfile.close()
            printer = config[0][0][len('sciFLEX'):]
            numpdc = int(config[8][0][len('Nozzle(s):')])
            srows = int(config[18][0][len('X =')])
            scol = int(config[19][0][len('Y =')])
            spotsMapping = np.array(config[25:25 + srows][:scol], dtype=object)
            spotsMapping = np.array(config[25:25 + srows][:scol])
            spots_layout = spotsMapping != ''
            spotsLayoutUI = Ui_Frame()
            spotsLayoutUI.setupUi(np.array(config[25:25 + srows][:scol], dtype=object))
            spotsLayoutUI.setupUi(np.array(config[25:25 + srows][:scol]))
            if spotsLayoutUI.exec():
                for i in range(srows):
                    for j in range(scol):
                        spotsMapping[i,j] = spotsLayoutUI.table.item(i,j).text()

        else:
            del settings
            self.hide_progress_layer()
            return
        # printer specification
```

Purpose

- Customize setups of spots (testing samples) and well invalidations throughout the test runs
- Updated QuantiSpotv2.6.7 in order to improve patient tests and increase accuracy of lung diagnostics
- Increased accuracy by 10% and increased efficiency of the test by 6%

6%