Muhammad Shirazi <ahad.shirazi@ryerson.ca>

2022 Ryerson Engineering Day

2 messages

Google Forms <forms-receipts-noreply@google.com> Thu, Mar 31, 2022 at 9:43 PM
To: ahad.shirazi@ryerson.ca

Thanks for filling out 2022 Ryerson Engineering Day

Here's what was received.

Edit response

2022 Ryerson Engineering Day

Date: Friday April 29, 2022
Time: 9:00 to 5:00 pm
A showcase of capstone design projects.
Location:
George Vari Engineering and Computing Centre, 245 Church Street.
All Engineering Departments will be participating in the Ryerson Engineering Day
Biomedical, Computer, and Electrical Engineering will display their posters and projects in the 3rd. and 4th. floor labs .
Aerospace, Civil, Chemical, Mechanical and Industrial Engineering will display their posters on the 2nd, 3rd and 4th floor hallways and in the Sears Atrium.
The Dean's Office will provide pizza and pop for lunch.

Your email (**ahad.shirazi@ryerson.ca**) was recorded when you submitted this form.

General Information for Electrical, Computer, and Biomedical Students

Ryerson Engineering Day preparations require that your team fill in a registration form and submit a poster for printing.
Step 1 - Read over the FAQ and poster specifications. Take note of deadlines and requirements.
Step 2 - The team leader fills in the form with as much detail as possible where requested.
Step 3 - Design a poster as per the specifications and submit it for printing.
Please take note of the submission deadlines for the registration form and poster.
Late forms or posters may result in an academic and or financial penalty.

Registration Form must be submitted by 11:59pm Thursday March 31, 2022

You may edit and resubmit the form up until the deadline. After the deadline email changes to jkoch@ee.ryerson.ca

Poster must be submitted by 11:59pm Thursday April 14, 2022.

The department covers the cost of printing, if you miss the deadline your team will be responsible for the cost of printing the poster.
For Open House questions. Call Jim Koch at 416-979-5000 ex556118.
e-mail jkoch@ee.ryerson.ca. Or drop by his office ENG418.

Frequently Asked Questions

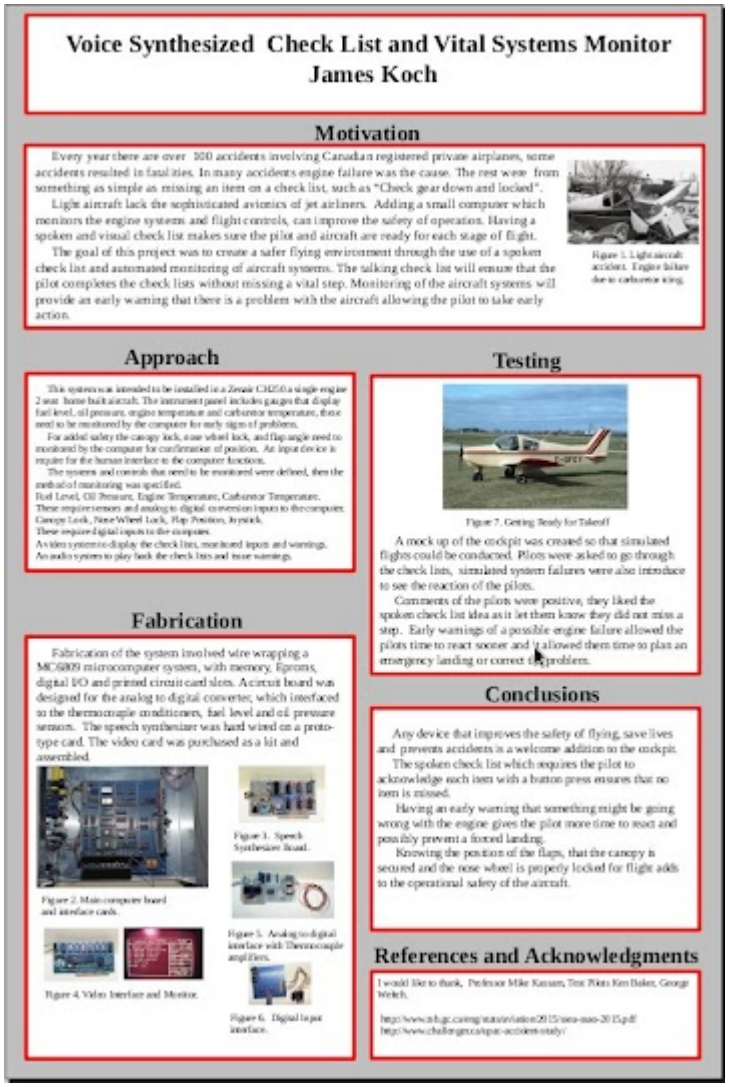
Q: MUST MY TEAM ATTEND?
A: From the course Outline: Students are required to participate in an "Open House" exhibition.
Q: WHEN SHOULD YOU ARRIVE TO SET UP.
A: Doors will be unlocked around 9AM.
Q: WHY DO ALL TEAMS NEED TO REGISTER, AND WHAT IF THIS FORM IS SUBMITTED LATE?
A: - We need the information from the registration form to decide who gets setup in which lab, and what equipment to place at each team's station.
If your registration form is late, you may not be placed in the best location and you may not get requested equipment. Planning starts the day after forms are due.
Q: OUR TEAM IS USING EQUIPMENT FROM A DEPARTMENT RESEARCH LAB, ANOTHER DEPARTMENT, COMPANY OR HOSPITAL, HOW DO WE GET IT PUT AT OUR STATION?
A: It is the team's responsibility to obtain permission from your FLC and the owner of the equipment before it can be moved. Your team will be responsible for moving it to your station the morning of the Open House. The lead group member should contact Jim Koch to arrange help with moving if necessary.
Q: HOW AND WHERE WILL CAPSTONE PROJECTS BE DISPLAYED?
A: Each team will be assigned a bench in one of the ENG labs based on equipment needs and FLC recommendations.
- Lab benches are cleared of all extra equipment, only the equipment requested on the registration form will be placed at the bench.
- In the special requirements section of the registration form be sure to state if you need extra floor space for robots etc., and if you are using wireless devices and what frequency so that projects on the same frequency can be placed in separate rooms.
- Each Capstone project poster (designed and submitted by April 9th.) will be set up at the teams station, see below.
Q: WHO CAN I ATTACH WIRES TO FOR BODY MEASUREMENTS?
A: No visitors are to be tested, only group members designated and approved by your FLC are permitted.
Q: WILL TEAMS BE ABLE TO CONNECT THEIR COMPUTER TO THE DEPARTMENTS NETWORK?
A: Before requesting a wired connection, please see Jason Naughton in ENG439 who will determine whether you really need one. If you require wired network access, please make sure you indicate it on the form.
Q: WILL TEAMS BE ABLE TO USE THE LABS DURING THE EXAM WEEKS?
A: Yes but in some cases access will be limited.
- Set up for open house takes about 8 days. Labs are cleared of equipment, benches are cleaned etc. While we are working on a lab it will be closed, usually for 1/2 a day.
- Power project labs are set up first, students assigned to these labs may use their assigned bench under the same conditions as during the semester. ENG308, 309, 310 will only be open when a engineering support person is available.
- ENG 306, 307 will be the last labs set up, generally the day before open house, once these labs are set up there will be limited equipment based on the needs of the team assigned to the bench.
- All labs will open 1 hour before the start of the Open House.
Q: I WANT TO USE A LCD PROJECTOR, WHO SUPPLIES IT?
A: Use is NOT recommended, rooms are too bright, space where it will work well is limited, we have to keep the lights on for the other projects. If you insist, you must bring your own projector and screen, or

book them through Ryerson Technology Equipment and Services located in Kerr Hall East, room KHE227.
Q: WHAT SHOULD I WEAR, WHAT SHOULD I BRING?
A: Please dress as if you are going to a job interview. Industry guests will be invited to the open house.
- Remember to bring some up to date resumes.
Q: CAN I EAT/DRINK IN THE LAB?
A: We prefer you didn't. Lunch will be served on the 4th. floor, please keep Food and Drink up there.
- Please be careful, you are still responsible if you spill something and damage equipment, or cause an accident.

Project Poster

Each project team is required to create a poster and submit a PDF copy of the poster by 11:59pm Thursday April 14, 2022.
The department will cover the cost of printing and mounting posters submitted by the deadline.
Note: Late submissions will not be printed by the department. If your team misses the deadline your team becomes responsible for printing and the costs, which average 25 - 35 dollars. If you end up printing your poster please bring it to ENG418 for mounting no later than April 23rd.
Poster dimensions: 24" wide x 36" high, PORTRAIT format only.
Poster file name: Name your poster file using the following format:
ProjectCode_student_last_names(all three students).PDF
Example of the poster file name: NP01_Bardeen_Shockley_Brattain.pdf
ELE/COE Students, please email your file to jkoch@ee.ryerson.ca and copy your FLC. Some FLC's may want to see your posters before submission, please check with your FLC.
BME Students, please have your FLC check and OK your poster, then email your file to jkoch@ee.ryerson.ca
Poster must contain the following key information:
1. Title of the project
2. Name of the authors
3. Motivation: Brief the motivation of your project
4. Your approach: Detail your approaches using text, figures, tables, charts
5. Conclusion: Highlight your contributions and findings of the research
Posters will be printed by the department and mounted in three fold poster boards and set up at the teams station, see below.
Reference: There are posters from 2018, 2019 on the ENG 3rd floor that you can use as references in designing your posters.
If you are including pictures try and use ones with as high a resolution as possible otherwise they will look very pixelated when blown-up to poster size.
If you are going to include the Ryerson Logo on your poster please follow the guideline found at http://www.ryerson.ca/brand/index.html
Sample Template, Click or copy and paste. Note: Will open an external link
24" x 36" Poster Template
https://www.ee.ryerson.ca/~jkoch/openhouse/2019_Capstone/24x36postertemplate.pptx
Had posters been required in 1987 when I did my capstone project, my poster would have looked something like this. See below. For the full size version click > https://www.ee.ryerson.ca/~jkoch/openhouse/2019_Capstone/jimkochposter.pdf

Sample Poster Layout



Voice Synthesized Check List and Vital Systems Monitor

James Koch

Motivation

Every year there are over 300 accidents involving Canadian registered private airplanes, some accidents resulted in fatalities. In many accidents engine failure was the cause. The rest were from something as simple as missing an item on a check list, such as "Check gear down and locked".

Light aircraft lack the sophisticated avionics of jet airliners. Adding a small computer which monitors the engine systems and flight controls, can improve the safety of operation. Having a spoken and visual check list makes sure the pilot and aircraft are ready for each stage of flight.

The goal of this project was to create a safer flying environment through the use of a spoken check list and automated monitoring of aircraft systems. The talking check list will ensure that the pilot completes the check lists without missing a vital step. Monitoring of the aircraft systems will provide an early warning that there is a problem with the aircraft allowing the pilot to take early action.

Figure 1. Light aircraft accident. Engine failure due to carburetor icing.

Approach

This system is as intended to be installed in a Zenair CH250 a single engine 2 seat home built aircraft. The instrument panel includes gauges that display fuel level, oil pressure, engine temperature and carburetor temperature, these need to be monitored by the computer for early signs of problems.

For added safety the canopy lock, nose wheel lock, and flap angle need to monitored by the computer for confirmation of position. An input device is require for the human interface to the computer functions.

The systems and controls that need to be monitored were defined, then the method of monitoring was specified.

Fuel Level, Oil Pressure, Engine Temperature, Carburetor Temperature.

These require sensors and analog to digital conversion inputs to the computer.

Canopy Lock, Nose Wheel Lock, Flap Position, Joystick.

These require digital inputs to the computer.

A video system to display the check lists, monitored inputs and warnings.

An audio system to play back the check lists and issue warnings.

Testing

Figure 7. Getting Ready for Takeoff!

A mock up of the cockpit was created so that simulated flights could be conducted. Pilots were asked to go through the check lists, simulated system failures were also introduce to see the reaction of the pilots.

Comments of the pilots were positive, they liked the spoken check list idea as it let them know they did not miss a step. Early warnings of a possible engine failure allowed the pilots time to react sooner and it allowed them time to plan an emergency landing or correct the problem.

Fabrication

Fabrication of the system involved wire wrapping a MC6809 microcomputer system, with memory, Eproms, digital I/O and printed circuit card slots. A circuit board was designed for the analog to digital converter, which interfaced to the thermocouple conditioners, fuel level and oil pressure sensors. The speech synthesizer was hard wired on a proto-type card. The video card was purchased as a kit and assembled.

Figure 2. Main computer board and interface cards.

Figure 3. Speech Synthesizer Board.

Figure 5. Analog to digital interface with Thermocouple amplifiers.

Figure 4. Video Interface and Monitor.

Figure 6. Digital input interface.

Conclusions

Any device that improves the safety of flying, save lives and prevents accidents is a welcome addition to the cockpit.

The spoken check list which requires the pilot to acknowledge each item with a button press ensures that no item is missed.

Having an early warning that something might be going wrong with the engine gives the pilot more time to react and possibly prevent a forced landing.

Knowing the position of the flaps, that the canopy is secured and the nose wheel is properly locked for flight adds to the operational safety of the aircraft.

References and Acknowledgments

I would like to thank, Professor Mike Kassum, Test Pilots Ken Baker, George Welch.

http://www.tsb.gc.ca/eng/stats/aviation/2015/ssea-stao-2015.pdf

http://www.challengeair.ca/spar-accident-study/

Sample Poster Setup

SUBMISSION DEADLINES

Registration Form must be submitted by 11:59pm Thursday March 31, 2022.
Poster must be submitted by 11:59pm Thursday April 14, 2022.
Poster file name: Name your poster file using the following format:
ProjectCode_student_last_names(all three students).PDF
Example of the poster file name: NP01_Bardeen_Shockley_Brattain.pdf
Make sure you use the format above or it will be rejected.
Make sure you verify the size of your poster. If you submit an incorrect size the printers will enlarge or shrink to fit, and it could make your poster look bad.
For Open House questions.
e-mail jkoch@ee.ryerson.ca. Or drop by my office ENG418.

Open House Information and Equipment Request Form

Information collected via this form will be used to place groups and prepare the Open House programme.

Project Information

Project Title: *

Ladder iterative load flow Algorithm

Project Code: *

This is the two- or three- letter (in UPPERCASE), two-number designation; e.g. KU01, BV03, YAZ01. If this is a self-generated project, please use your initials followed by 01. If you forgot your code please visit http://www.ee.ryerson.ca/capstone/topics.html

BV01

Group Member 1 First Name: *

Muhammad

Group Member 1 Last Name: *

Shirazi

Group Member 2 First Name: *

If no more members Enter N/A in both first and last name

Rehnuba

Group Member 2 Last Name: *

Fairoj

Group Member 3 First Name: *

If no more members Enter N/A in both first and last name

Abrar

Group Member 3 Last Name: *

Ahsan

Group Member 4 First Name *

If no more members Enter N/A in both first and last name

Parham

Group Member 4 First Name *

Habibi

FLC *

Note: Names are not in alphabetical order. Scroll all the way down to Find your FLC

B. Venkatesh ELE

Topic Originator: *

Self, Partner(s), Name of Professor, Name of external source.

Bala Venkatesh

Topic Category: *

- Biomedical
- COE: Embedded Systems

- ○ COE: Software Systems
- ○ COE: Distributed Systems / Networking
- ○ COE: FPGA / Reconfigurable Computing
- ○ ELE: Consumer Products / Applications
- ◉ ELE: Power
- ○ ELE: Microelectronics
- ○ ELE: Signal Processing / Communcations

Photography Release: *

Pictures/video taken of team/project during the Open House may be used in promotional materials by Ryerson.

- ◉ Yes
- ○ No

Equipment Needs: *

Do you require any test equipment or computers from the labs?

- ○ No - Continue to Special Requirements
- ◉ Yes - Continue to Equipment Selection

Equipment Selection

Remember there is only so much room on a bench, please ask for only what you really need and will use.

Bench Equipment - DC Power Supplies:

Triple Output (from ENG306, ENG307, ENG303), Select Quantity Required:

- ◉ 1
- ○ 2

- ○ 3
- ○ 0

Bench Equipment - DC Power Supplies High Voltage/Current 60V/3A:

GW Triple Output (from ENG308) Select Quantity Required:

- ○ 1
- ○ 2
- ◉ 0

Bench Equipment - Multimeter:

Agilent Dual Display, Select Quantity Required:

- ○ 1
- ○ 2
- ◉ 0

Bench Equipment - Scope:

Keysight DSO-X 2024A, Select Quantity Required:

- ○ 1
- ○ 2
- ◉ 0

Bench Equipment - Function Generator:

GW Instek GFG8216A, Select Quantity Required.

- ○ 1
- ○ 2
- ◉ 0

Computer Equipment - Lab Computer and LCD monitor

Networked Dell computer, LCD monitor, keyboard and mouse. Select Quantity Required:

- (●) 1
- ( ) 2
- ( ) 0

Computer Equipment - TI Module from ENG308:

- ( ) 1
- ( ) 2
- (●) 0

Computer Equipment - LCD Monitor

For teams bringing their own computer/laptop and need a monitor. Note: Lab Monitors only have VGA and DVI connectors, computer/laptops with HDMI video will not work unless you bring an adapter. Select Quantity Required:

- (●) 1
- ( ) 2
- ( ) 0

Network Connection - Hardwired network access:

Note: Hard wired connections are only available a few days before open house for testing and the day of open house. Once you have submitted this form, please see Jason Naughton in ENG439 who will explain what is required to set up a hard wired connection. Why do you require a hard wired connection?

Computer Equipment - Modules and Boards:

- Keil MCB1700 (from ENG408)
- DE2-115 (from ENG408)
- Spartan-3E (from ENG409)
- TI Spectrum Digital (from ENG409)
- DE1-SoC (from ENG412)
- Other:

Power Equipment - Lab Volt Modules

List all required equipment from ENG309

Undergrad Lab Equipment Not Listed Above:

Scope Probes, Test Leads, Test Jigs, Keysight Scope with Function Generator Option, Equipment lent to you by Jim Koch

Grad Lab Research Equipment - Other Department or External Company/Institution Equipment

List equipment to be moved and where it is coming from. It is the team's responsibility to obtain permission from your FLC and the owner of the equipment before it can be moved. Your team will be responsible for moving the equipment the morning of the Open House. The lead group member should contact Jim Koch to arrange help with moving if necessary.

Special Requirements

Additional, non-equipment related requirements.

Special Requirements - Click all that apply:

- [ ] Extra floor space for robots etc.
- [ ] Keep away from other projects using Infra Red.
- [ ] Keep away from other projects using wireless devices.
- [ ] Other: .....

Joint Projects Placement:

Do you need to be placed next to another team? Please list project code(s) and title(s) and at least one contact name per team.

.....

Very Important!!!!!! You should receive a copy of the form, it gives you a link to edit the form as well as copy of your answers and the Poster info. Don't delete it you may needed it.

Muhammad Shirazi <ahad.shirazi@ryerson.ca> Thu, Mar 31, 2022 at 9:43 PM
To: Abrar Ahsan <abrar.ahsan@ryerson.ca>, Rehnuba Fairoj <rfairoj@ryerson.ca>, Parham Habibi <parham.habibi@ryerson.ca>

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