

# UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

**Digital Scholarship Lounge**

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Title

**Robert Minvielle**

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Name of Submitter  
*(Faculty or Staff Only)*

**School of Computing and  
Informatics**

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Organization

Title: Digital Scholarship Lounge Date: 6/18/2018  
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Department/College/Org: School of Computing and Informatics

**ABSTRACT (250 words or less):**

In our present world, everything is becoming connected. From cars to buildings, we are increasingly entering the “Internet of Things” world in addition to autonomy (robots and self driving cars for example). Students need a place to discover, gain knowledge of, and interact with interconnected devices, how they operate and how we can create new and exciting devices to control our world. The Digital Scholarship Lounge will serve as the entry point into a learning space for making devices, discovering technology and sharing of ideas. It will also serve as an undergraduate research area and as a center for digital scholarship. It will achieve this goal through scholarship, openness, and the resources needed for inventing and producing digital products.

## **A) Purpose of grant and impact to student body as a whole**

The Digital Scholarship Lounge will serve as an area of discovery, invention and production for student ideas, projects and scholarship. The lounge will be located in Oliver Hall, and will be home to a variety of tools to aid and assist in digital scholarship. The tools will be three dimensional printers, Internet of Thing (IoT) devices such as Raspberry PI units and Arduinos, software, plotters, parts and resources.

The purpose of the lounge is to introduce students to coding, how to build internet connected devices, have aids to digital scholarship, and have resources for making internet connected “things”. It should also serve as an introduction to machine learning, autonomy and robotics. The advent of low barrier to entry artificial intelligence is transforming our world, and our students need introductions to these topics in order to gain an understanding of them. Currently there are no single spaces on campus where students can have resources for digital scholarship, three dimensional printing, working with internet connected things (IoT), have access to workstations and open source software and the ability to use and modify those resources to their needs or research. This is also an opportunity for undergraduate students to be hands on with these kinds of tools and resources without having to be in graduate school or in a research facility.

The tools used in the digital scholarship lounge will be the following: The two existing workstations will be used for software development, to load the three dimensional printers, and for programming the IoT devices. The raspberry pi and arduino units will serve as the basis for IoT design and creation. Students can use them to build automation, artificial intelligence and machine learning platform beds. Work has already been done from google for example, to utilize code on the raspberry pi for artificial intelligence based projects. This makes the “time to market” much smaller, and therefore is not out of reach of the time an undergraduate may devote to a project. The extra items in the list (resistors, capacitors, soldering stations, etc) are to connect the IoT devices to the real world sensors, motors, etc. The three dimensional printers shall be used to manufacture parts for IoT devices (mechanical systems, mounts, enclosures, parts for robotics). The extra items in the IoT list are included for creating different structures which require different parts in the printer (this has to do with how the print heads of a three dimensional printer work). The rationale for two printers is that one can be dedicated PLA and the other dedicated ABS. This will cut down on reconfiguration time and allow multiple students to create simultaneously.

The digital scholarship lounge will be run by the senior Computer Science and Informatics students with guidance from staff and faculty. This will give an opportunity for computer science and informatics students to be more engaged with digital scholarship. This will also give our undergraduates a chance to perform undergraduate research with their peers.

## **B) Projected lifetime of enhancement**

The initial project proposal expected lifetime is 5-10 years. The expected lifetime of the digital scholarship lounge will be longer, however, items like printers and internet of things devices have a useful life and will need upgrading. The IoT devices, which are the lowest cost, will have the shortest useful lifetime, perhaps 5-7 years.

**C) Persons responsible for:**

I. **implementation:** Robert Minvielle

II. **Installation:** Robert Minvielle and Troy Leger

III. **Maintenance:** Troy Leger

IV. **Operation:** Faculty, Sr. CMPS/INFX students

V. **Training (with qualifications):** Robert Minvielle and Troy Leger

## Budget Proposal

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1.     **Equipment** **\$5004.39**

**This includes the following items:**

**robo r2 3d printer \$1499.99 (x2), robo expert bundle \$199.99 (x2), robo r2 hexagon hot end assembly \$50 (x2), 3xPLA spools at \$35 each, 3xABS spools at \$35 each, raspberry pi 3B+ \$39, 32GB SD card \$12, raspberry pi power supply \$12 (two of all raspberry pi units) Hakko FX88D-23BY soldering station \$99, Hakko T18 chisel pack \$28, Hakko solder cleaner \$19, Edsyn soldapullit \$22, elenco hook up wire kit is \$18.95, elegoo breadboard 3 pack \$9.99, capacitor kit \$19.99, resistor kit \$19.99 LED kit \$15.49, Arduino kit \$90 (x2), Arduino uno \$30 (x2), Arduino Industrial IoT kit \$40 (x2), Dell monitors \$240 each (x2), upgrades for existing School of Computing workstations \$386**

2.     **Software** **\$0**

3.     **Supplies** **\$0**

4.     **Maintenance** **\$ 100**

**This would cover replacement solder, parts, and extra wire.**

5.     **Personnel** **\$0**

6.     **Other** **\$0**

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**TOTAL:** **\$5104.39**