

Example 2, Curriculum project

Project Type: SoTL Research or Curriculum

1. **Project Title:** Robotics in an Undergraduate Computer Science Curriculum: A systematic and comprehensive study
2. Date of Application:
3. Project Funding Dates:
4. **Abstract (3-5 sentence summary of project):**

Almost from the onset of modern-day robotics, educators have been interested in introducing them into courses, outreach, and curricula. Unfortunately, the corpus of literature (which is rather large in quantity) is disjointed and difficult to utilize in practice; be it implementation or extending the common knowledge base. This work is the start of a lofty goal of bringing this literature together in a more tangible way to serve our discipline's future understanding and research. Additionally, we expect to tease out and rigorously define the many subtleties that exist in this field of study.
5. SOTL: Purpose of your project study:
 - **Curriculum: What needs is this curriculum project meeting (department, students, etc.)?**

The results will inform the CS community and department. The aim of the proposed work is to take a systematic and comprehensive look at the current state of robotics integration into Computer Science curricula in hopes of identifying the current state of this field, identifying open questions, and disseminating the knowledge of all this work in an easily digestible and transferable way. Without question, this is a lofty goal for a proposal of this size, but believe it is one that can be done to great effect with UWEC student(s) and current department and university resources.

This project aims to address the following questions. - Broadly speaking, what is the current state of integrating robotics into Computer Science courses and curricula? - What is the current state of objectively quantifying the impact robots have on Computer Science students? - Are there critical/important open questions regarding this field? - As a community, do we have a common understanding of all the subtleties and nuances? - With a more comprehensive understanding, is future research and study into integrating robotics into the Computer Science curriculum worth-wild? - What knowledge, understandings, and skills can be transferred to other disciplines and age groups? Are there any important distinctions that may need to be considered?
6. SOTL: Research Question:
 - **Curriculum: Type N/A in this field**
7. SOTL: Study Design:
 - **Curriculum: Provide a detailed plan for the anticipated steps in the curriculum development.**

This study will use a combination of qualitative and quantitative tools to explore the current state of robotics in Computer Science curricula. We will start by generating a taxonomy of the

literature with a focus on quantifying as much of the literature as possible as we have done in previous studies. We will also generate a survey tool in parallel with this work to gauge the current view of the literature from the Robotics and Computer Science education community. This survey tool will be created to gauge the understanding that current practitioners have regarding the state of the literature and to gather data on what the community feels are the most pressing questions and concerns. We will then compare and correlate these results with the more quantitative approaches we will be taking during the development of the taxonomy. Unfortunately, the details of these tools and the metrics of the taxonomy are poorly defined as much of this will be fleshed out as we dive deeper into the literature.

8. SOTL: Assessment of the Project:

- **Curriculum: What standards are you basing your curriculum development on? (Professional National or State standards, Course Design standards - OSCQR, UWEC Department Standards, Honors Standards, Other. Please list.)**

The aim of this work is to highlight various questions that can be explored in the classroom and curricula setting. The evaluation of the success of this work will be with the acceptance of our findings by practitioners in the Robotics and Computer Science disciplines along with a tangible list of questions that remain understudied and contain some level of value to the community. With that said, a secondary goal will be to develop in-class exercises/studies with the use of the physical robots (supported by the Computer Science department) to address questions raised during this work. Student researchers would be integral in developing the various codebases needed to conduct such a study. This work is not detailed here because we (the community at large) do not have a solid grasp of the work done and left to be done.

9. References (at least two):

10. Student(s) Activities and Roles:

11. Faculty Roles:

12: Plan for Dissemination of the Results: