



**Materials, Services, Facilities and Technology Fee  
Fiscal Year 2017-2018 Budget Request Form\***

**DUE: Friday, January 20, 2017 @ 5:00 P.M.**

**Please return completed requests via email to [gina.matibag@csuci.edu](mailto:gina.matibag@csuci.edu)**

If you have questions about this form, please contact Gina Matibag at (805) 437-3320  
For additional information please consult the MSFT web page.

Project or Activity Title: **Mobile Robots for Artificial Intelligence Laboratory**

Name of organization requesting funds: **COMPUTER SCIENCE**      Date: **01/13/2017**

Requestor: **Prof. AJ Bieszczad**

Contact Phone Number: **(805) 437-2773**

E-mail: **aj.bieszczad@csuci.edu**

Amount of MSFT Funding Requested: **\$12,600.00**

Date Funding Needed by: **07/01/2017**

Will you receive funds from any other source(s)?    YES      **NO** **x**

*If yes, please detail amount requesting from other source(s) as well as your total request for fiscal year 2016-2017 (including request from MSFT).*

Has this project or activity previously received MSFT funding? **No.**

If yes, please attach copy of report

Please describe how the use of MSFT funds for this project or activity will benefit the CI student body.

Please provide the following in your application. You may attach additional pages and materials (applicants may be requested to meet with the committee to discuss proposals):

1. **Brief Project Description.** Describe the project and its benefits to the educational or co-curricular experience of students at CI. Please provide specific information about how MSFT funds will be used and their impact on the campus. Please describe how this project benefits CI students? Please describe items and provide justification if your request includes the purchase of computers, equipment, furniture or other materials. Please provide a timeline for implementation of the proposed project. If physical improvements are requested please describe need, scope and impact of work to be

completed. If the project includes provision of services please indicate the type of service, personnel costs and level or quantity of service to be provided with project funds.

**Artificial Intelligence (COMP469) course has a laboratory component in which two-student teams apply their knowledge acquired in the theoretical part of the course to plan navigating mobile robots in a maze. There are many engineering challenges with using physical agents, as in many instances the theory needs to be adapted to practical environments. Such educational approach enriches the students considerably and is valued very highly by potential employers in both industrial and academic laboratories.**

**The robots must plan attaining certain goals (such as finding an exit, or visiting some specific locations in some a priori unknown order) by navigating the maze autonomously resolving arising issues such as avoiding walls and obstacle and identifying cues. They utilize numerous algorithms studied in the theoretical part of the class that include planning, mobility control, image processing, pattern identification, shortest path calculation, adaptation to change, and so on, in addition to “regular” software components like the underlying operating system with device drivers (interfaces) and networking. To realize the tasks, the robots are equipped with 6 engines with accompanying servo controllers, an on-board computer, an HD camera, and a LIDAR scanner.**

**The requested robots may also be used in other projects related to Artificial Intelligence and Machine Learning if logistics and timing allows. For example, there are several students working on capstone projects that require similar hardware to realize objectives focused on more specific applications; for example, one group is working on workshop workflows using a metaphor of mixing specific paint colors in certain order.**

**The robots are not for one project; rather, they will support numerous student over several semesters.**

- 2. Project/Activity Budget.** Please enclose a complete detailed budget of the entire project. Indicate (in **bold**) specific items of requested MSFT funding including (where applicable) a schedule and priority of project items to be considered if the project is funded at a reduced level. Were other, less costly, approaches considered when preparing the budget for the project? Are there elements that could be eliminated or deferred if funding is not available for the entire project?

**The following are required components for each of the 12 robots:**

**1) Robot platform (~\$300):**

**2) LIDAR scanner (~\$400)**

(there are several existing and forthcoming choices with prices ~\$400 for well-supported options).

**3) RaspberryPI kit (\$~100).**

4) RaspberryPI HD camera (\$~50).

5) Other components, spare parts, and tools (~\$50).

**Cost of one robot: \$900**

**Total cost of 14 robots (12 for students, 1 for the instructor, and 1 spare): \$12,600.00**

3. **Project Assessment.** Describe how the effectiveness of the project will be assessed and measures that will be used to determine if it has attained its objectives. Please note a report will be due at the end of the semester (or fiscal year for annual projects). If funded, how will the project acknowledge the use of student funds so that students are aware that their student fees made (or helped to make) it possible? If appropriate, indicate how the project or activity promotes sustainability at CI.

**Student SRTs and peer evaluations will be used to assess the impact of the project.**

4. **Sources of Project Support.** Please list the other sources of funding, and additional support for the activity. If this project or activity has been conducted previously please indicate how it was funded. Please explain if MSFT is the only source of support for the project.

**None.**

**If funded, MSFT will be the only source of support for the project.**

**Fiscal Management:** Project sponsor's unit or department may be responsible for incurred over and above what is funded through the MSFT. If support is requested for costs beyond initial award, or for use on activities or materials not included in approved proposals, the project sponsor must seek approval from the MSFT committee. The project sponsor will be responsible for managing purchases and transfers of funds related to approved projects.

Please review MSFT web page for information about the fund and its objectives before submitting your application.

\_\_\_\_\_  
Requestor

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
AVP / Dean

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date