

## Request for Technology Fee Funds: FY20

**NOTE: A separate request should be made for each initiative.**

I. Department Number/Department Name:

360	College of Computing
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Title of Request (please be brief):

New Technologies for GVU Prototyping Lab
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Amount of Request (formula from detailed budget below):

\$110,145
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Type of Proposal: Atlanta or Dist Lrng/Non-Atl

Atlanta
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Was this project request funded in FY19?

No	(Yes or No)
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Are there installation/renovation costs associated with this request?

Yes	(Yes or No)
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If "Yes" then indicate the source of approved funding:

*(Note: Tech Fees are not allowed for installation/renovation)*

GVU Center
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**Executive Summary of Request (100 words or less):**

To promote innovation and continued excellence in education and research we propose to improve and augment the current capabilities of GVU Prototyping lab, located in TSRB S027.

Specific class and/or lab initiative(s) if applicable:

GVU Center Prototyping Lab - TSRB S027
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Contact person for this request (incl. phone #):

Tim Trent (404-385-7610)
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Responsible faculty for this request (incl. phone #)

Keith Edwards, Tim Trent
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Indicate priority per department if applicable:

Number          of         

Indicate priority per college or unit:

Number   6   of   9  

II. Impact on Students - Provide course title, course number, and anticipated enrollments:

Titles/Numbers of Course(s)

see below
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Anticipated Enrollments

Graduate:	363	(per <table border="1" style="display: inline-table; width: 30px; height: 15px;"><tr><td>sem</td></tr></table> )	sem	sem or yr
sem				
Undergraduate:	839	(per <table border="1" style="display: inline-table; width: 30px; height: 15px;"><tr><td>sem</td></tr></table> )	sem	sem or yr
sem				
Total:	1,202			

The estimated percent use of the resources in the item by:

Students	80%
Faculty	20%
Other	0%
Total:	100%

Brief explanation of how estimate was achieved.

The Prototyping Lab is a resource provided by the GVU Center primarily for the classes and researchers associated with GVU, but is open to campus. As of the last audit (Summer '18), the registered users were ~80% students, ~20% faculty/staff.

**NOTE:** Other impacts on students should be described in narrative to include benefits to the students affected.

III. Detailed Budget - Requested Items by Category *List separately any equipment, software, and other allowable expenses (see Tech Fee Guidelines). There is a formula in the "total column" that multiplies the number of items times the unit price. You may enter a figure into the total column if the unit pricing is not applicable. If you need additional rows, contact the Budget Office to receive a modified form. Software or data license proposals should indicate how many years the item has been funded through student tech fees in narrative.*

**Supporting documentation is required-** Include price justification in some form, such as quotations, published price lists, etc. as a separate PDF attachment. All supporting information should be in a single PDF.

Proposed Number of Items	Estimated Price per Unit	Total (\$)
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Epilog G2 Fiber Laser	1	\$60,995	\$60,995
Projet MJP 2500+	1	\$49,150	\$49,150

**Total** (linked to the total amount of request line above)

\$110,145
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Please return form via e-mail in Excel format to: [techfees@business.gatech.edu](mailto:techfees@business.gatech.edu). Supporting information only in a PDF file.

**IV. Narrative** - Provide narrative justification for your intended use of the technology fee funds. Include narrative on how the education or research of the students will be enhanced. To include curricular, co-curricular, and extracurricular benefits expected to accrue to students through provision of this resource, including students outside the unit. Briefly state how information regarding similar technology use elsewhere on campus to benefit from lessons learned, to standardize, or differentiate, and to avoid duplication. Also include how the request aligns with the Strategic Plan of Georgia Tech.

Impacted Courses: ME 2110, ME 4182, CS 2701, CS 3651, CS 4605, CS 4690, CS 4699, CS 2698, CS 2699, CS 4903, CS 4980, CS 4698, CS 7470, CS 8903

Georgia Tech is home to many makerspaces. The development of these spaces, including the GVU Prototyping Lab, arose from the recognition that simply focusing on theory is not sufficient to maintain the Institute's place amongst the most respected technology focused institutions. It has been demonstrated in many different instances that allowing students the ability to bring concepts into a physical space where they can interact, observe, and demonstrate those concepts serves to greatly improve academic achievement. Further, providing spaces where a student can enter with just an idea and leave with a fully realized prototype allows students to develop the skills and portfolio materials they need to excel in modern industry.

The GVU Prototyping Lab is one of the smaller makerspaces on campus, and yet is consistently utilized by students from each of the colleges at Georgia Tech for classwork, capstone and senior design efforts, research projects, and Inventure Prize competitions. Additionally, many classes in CS and ME advise or require students to complete the necessary safety orientation to gain access to the lab. In spite of catering to the human centered and ubiquitous computing projects that are common to the GVU Center, the Prototyping Lab is considered by many to be an invaluable resource to the entirety of campus.

Since the Prototyping Lab's establishment in 2006, the space has experienced a steady increase in utilization as well as a diversification of projects. To keep pace with the higher demand as well as the new and unexpected innovations that students bring with their projects, there is a driving need to expand the capabilities and capacity of the lab. The funds from this proposal will be used to purchase new equipment to accommodate the increased diversity of projects in addition to being able to facilitate a higher volume of students due to the increased speed at which projects can be completed. By adding state-of-the-art equipment, students will have the opportunity to use reliable, industry-standard tools and to experiment with new and developing technologies. The GVU Center has committed to maintaining the equipment, establishing a chargeback model to fund the materials, as well as providing staffing to educate users on operation; the only barrier to providing this new equipment is the initial cost.

The items in the proposed list of acquisitions has been chosen with care, and after consultation with individuals in similar spaces on campus, industry experts, and current constituents of the lab. Chosen equipment has been selected on the basis of representing the most "cutting-edge" of technology in the respective areas, while also being from manufacturers with a history of excellence and reliability and being types of equipment which are projected to increase in prominence in industry and research in years to come.

Epilog G2: Laser cutting is one of the most popular tasks in any makerspace on campus as it consistently yields high quality and precision parts while being cheaper than most other forms of fabrication. Epilog - a company which already provides high-quality lasers for multiple spaces on campus - has a new technology which has the potential to dramatically increase the capabilities of student projects at Georgia Tech. The G2 fiber laser features a galvanometer system (as opposed to the traditional gantry system on most laser cutters) which is advertised as having operation speeds up to 4x faster than the current lasers on campus. Additionally, this machine operates using a fiber laser instead of CO2 which has physical properties that allow for a much greater range of material options available to students. By adding a machine that has both a new mechanical setup as well as different laser properties than any others found at other makerspaces on campus, the Prototyping Lab will be able to dramatically increase student throughput while offering novel project options with varied materials.

Projet 2500MJP: UV Curable plastics make use of a resin-based printing process that allows for finer resolution parts than other printing methods. The 2500MJP offers different material options from the larger Projet currently in the lab, specifically offering some medical grade materials and some elastomeric (flexible, "rubber-like") materials. These capabilities are not present with ABS or Nylon printers and give more options for students creating projects with human-interface devices. Additionally, direct-printed molds (i.e. for silicone, resin, etc) that are made with elastomeric materials offer an entirely novel manufacturing process and wider range of materials compared to the rigid, difficult to remove molds that would result from other print materials.

Due to the modularity of this request, we can accept partial funding using the following ranking of importance, and request additional funding next year -

1. Epilog G2
2. Projet MJP

