Request for Technology Fee Funds: FY21

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

I. Department Number/Department Name: 360 College of Computing

Title of Request *(please be brief):* PACE Expansion to Support All College of Computing Students

Amount of Request *(formula from detailed budget below):* $96,600

Type of Proposal: Atlanta or Dist Lrng/Non-Atl Atlanta

Is this request similar to one funded in FY19 or FY20? Yes (Yes or No)

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

If "Yes" then indicate the source of approved funding:
(Note: Tech Fees are not allowed for installation/renovation)

Executive Summary of Request (100 words or less):

As High-Performance Computing becomes more ubiquitous in industry and research, experience with HPC practices and technology is quickly becoming a highly recruited skill, or an outright prerequisite in some instances. We propose to expand the College's existing investment in PACE and PACE-ICE to grant access to all undergrad and grad students in the College of Computing.

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

Contact person for this request (incl. phone #): Will Powell (4-9301), David Mercer (5-2518)

Responsible faculty for this request (incl. phone #) Will Powell, Ken Honea, Umakishore Ramachandran (4-5136)

Indicate priority per department if applicable: Number ____ of ____

Indicate priority per college or unit: Number 5 of 9

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

Titles/Numbers of Course(s) All CS undergrad and graduate students

Anticipated Enrollments

Graduate:	*405*	*(per* sem) sem or yr
Undergraduate:	2,883	(per sem) sem or yr
Total:	3,288	

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

Students	95%
Faculty	5%
Other	0%
Total:	100%

Brief explanation of how estimate was achieved.

These resources are intended for direct use by our Graduate and Undergraduate students

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 ($)
Compute Node	4	$7,000	$28,000
High Memory Compute Node	2	$9,200	$18,400
GPU Compute Node	2	$24,100	$48,200
Storage - $80/TB/yr	25	$80	$2,000
			$0
Total *(linked to the total amount of request line above)*			$96,600

Please return form via e-mail in Excel format to: 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.

OIT's Partnership for an Advanced Computing Environment (PACE) facility provides participants a sustainable, leading-edge high-performance computing (HPC) environment. Strong support from Georgia Tech's senior leadership enables PACE to provide infrastructure, software, and dedicated technical services at no additional charge for participants, allowing users to focus their HPC investments primarily on compute nodes and expanded storage. This frees faculty to focus on research while reducing their direct costs and increasing productivity of students and postdocs. The PACE facility is possible because of a long-term commitment by Georgia Tech to create an exemplary environment to advance Georgia Tech's leadership position in innovative research.

Beginning in 2016, the College of Computing and OIT-PACE joined forces to build an advanced shared educational computation cluster - PACE-ICE (Instructional Computing Environment) - to address the growing number of HPC resources requested by classes in the College of Computing and the School of ECE. Leveraging the PACE team's expertise in delivering High Performance Computing (HPC) resources, along with investments from OIT, College of Computing, and Tech Fee grants, we have created a campus resource that serves as a model that other departments can join with their own educational funds. PACE-ICE is currently being used for all HPC related coursework within the College of Computing, as well as courses in ECE, and Math.

However, as existing CoC hardware has aged and been retired, the College has realized another segment of our students that our current investment in PACE and PACE-ICE doesn't cover. The College of Computing has long hosted its own HPC facility separate from PACE, purchased with a combination of academic and research funding. It was designed not only to provide HPC resources to faculty and students for course work, but also as a research testbed specifically for non-sponsored research. Non-sponsored research fills an important role in the education of the Institute's students; the introduction to research processes through hands-on research and problem solving is an integral part of these students' education, but unfortunately these skills cannot be easily taught in a traditional classroom setting.

If we truly believe in the Institute's Strategic Objective to inspire creative and entrepreneurial thinking, we need to enable our students by providing them the tools they need to "customize their degrees". To further this mission, over the course of the last year we purchased 6 HPC nodes to be added to PACE using funds from the College's research budget. Based on current usage, we estimate that purchasing an additional 8 nodes will allow us to provide access to all on premise College of Computing graduate and undergraduate students. This will give curious undergraduate students an HPC resource that can be used for capstone coursework, or just self-directed learning, while also serving our graduate students an important resource for their non-sponsored research. We believe that this plays directly into the Institute's other strategic objective to prepare our students for global leadership, as well as be among the most highly respected technology-focused learning institutions in the world. As HPC become more ubiquitous in industry and research, equipping our students with hands on experience with these tools become increasingly important to maintaining Georgia Tech's position as a global leader.

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