From helping to shape the White House’s science policy to helping run one of the largest NSF Big Data hubs in the United States, at the Georgia Institute of Technology, we are setting the stage for even bigger and more exciting things. And I’m pleased that high-performance computing (HPC) has, and will continue to play, a foundational role in these agenda-setting activities.

Within Georgia Tech, researchers in a diverse array of areas are using and advancing HPC. These include computational biology, business analytics, chemistry, materials science, manufacturing, internet of things, smart cities, and astrophysics, to name just a few. In each case, scalable algorithms, software, and systems have an enabling role. Collaborations and interactions at the boundaries of these fields and computing have created a dynamic ecosystem within the entire university for making breakthroughs and discoveries that would not otherwise be possible.

To help those of you outside Georgia Tech connect with this ecosystem, the Institute has established several interdisciplinary research institutes and schools (departments). In many of these, HPC plays a vital part, including my academic home, the School of Computational Science and Engineering (CSE).

Beyond CSE, another important entity is the Institute for Data Engineering and Science (IDEaS), profiled later in this brochure, which is helping connect researchers around data analysis. IDEaS spans many research areas, but within it, two are foundational to HPC itself. These are the Center for Research into Novel Computing Hierarchies (CRNCH), which covers topics related to post-Moore computing, the center for Health Analytics and Informatics (CHAI), and the Center for High-Performance Computing (CHiPC). Together with other centers, like the Center for Machine Learning (ML@GT), we are all working to build bridges between computation and science, engineering, health, and commerce.

I’ve barely scratched the surface of everything else that is happening at Georgia Tech. It is a time like no other to be studying and researching HPC, particularly at Georgia Tech. I am incredibly excited to see what the future holds – and who will be part of that future. As you learn more about us in these pages, I invite you to reach out and connect with us. The more minds that work together, the greater the impact we can have within HPC research, and throughout the world.
**Research Highlights**

**Tom Kurfess**  
*Digital Volumetric Processing*

HPC is being utilized in a wide variety of areas, including manufacturing. Using a new voxel model-based approach called Digital Volumetric Processing, Kurfess and his team are operating at the nexus of big data and HPC. Their work is giving rise to a next generation digital twin for manufacturing that is enabling a number of advances in production operations such as gaming type interfaces for multi-axis machine tools driven by Graphics Processing Units (GPUs) that leverage the skill set of the next generation workforce to program state-of-the-art manufacturing equipment. This approach also drives What You See Is What You Get to a completely new level as this is applied not only to graphics and images on a screen, but to fabricating actual production class parts. Supported by over $4M in research funding from both the federal government and industry, Kurfess is extending their work into hybrid additive/subtractive systems utilizing classical layer-based prismatic approaches, as well as multi-robot systems to easily, rapidly and consistently produce next generation products that drive an entirely new generation of manufacturing enterprise.

**Dimitri Mavris**  
*Physics-Based Modeling and Simulation Tools*

For the past 25 years, Mavris and the Aerospace Systems Design Laboratory (ASDL) have specialized in multi-disciplinary integration of physics-based modeling and simulation tools. ASDL’s signature methods have streamlined the process of integrating parametric simulation toolsets and developed numerous surrogate modeling approaches allowing for large-scale design space exploration and optimization under uncertainty. Recent research combines these methods with advances in computing and computer science to enable large-scale virtual experiment incomplex systems design. This virtual experimentation concept combines ideas from multi-fidelity modeling, machine learning, data analytics, HPC, and visualization to create highly accurate digital testing environments that can reduce costly prototyping and physical testing cycles during the design process.

**John Wise**  
*Simulations of Galaxy Formation*

Wise uses HPC to conduct cosmological simulations of galaxy formation, focusing on the first stars and galaxies in the Universe. Wise’s research pushes the frontier of computational cosmology by including more complex physics, such as radiation transport and magnetic fields, and by improving the parallel efficiency of the simulation codes. He has over 15 years of experience in developing Enzo, a community-driven, open-source adaptive mesh refinement code. Wise is currently aiding in the development of Enzo-P, a next-generation code utilizing Charm++, that is currently scalable to 256k floating-point cores on the entirety of NSF’s Blue Waters machine.

**Surya Kalidindi**  
*Advancing Materials Science Using Community Expertise and Core Knowledge*

Kalidindi designs material internal structure, including composition, for optimal performance in any selected application, and identifies hybrid processing routes for its manufacture. He employs a blend of experimental, theoretical, and numerical approaches in his research. He leads the Materials Innovation Network (MATIN), a cloud-based e-collaboration and research platform focused on materials science and engineering innovation. His research group is building a modern, data-centered, materials innovation cyber-ecosystem that can dramatically lower the cost and time expended in the successful development of new and improved materials in high-performance commercial products. Their multiscale materials modeling and simulation tools use a novel data science enabled framework for effective scale-bridging. Called materials knowledge systems, it handles computations at the mesoscale with significant computational efficiency in problems where numerical integration schemes are challenging to optimize.

**Chloé Arson**  
*The Mechanics of Damage and Healing in Rocks*

Arson is a theoretical and numerical expert in the mechanics of damage and healing in rocks, thermo-chemo-poro-mechanics, and underground storage. She designs models that link microscopic damage and healing processes to macroscopic rock behavior. For example, Arson examines how salt grain sliding mechanisms can result in crack propagation and how diffusive mass transfer at grain interfaces can heal these cracks. She studies crack propagation at multiple scales, and how crack patterns affect rock strength, stiffness and permeability. By coupling different models, Arson can simulate multi-scale fracture propagation. She employs HPC to simulate the propagation of fracturing in shale. She also uses principles of micro-mechanics and thermodynamics to understand fragmentation processes in granular assemblies like ballast.

**David Sherrill**  
*Accurate and Fast Quantum Chemical Computations*

Sherrill develops approximations in electronic structure theory, implements these approximations as efficient computer programs, and applies these methods to study challenging chemical problems. He targets problems of broad chemical interest, including the influence of non-cova lent interactions in drug binding, biomolecular structure, organic crystals, and organocatalytic transition states. He currently uses fundamental forces of molecular resynthesis in prototype molecular systems to determine their strength, geometric dependence, and substituent effects. These investigations are foundational for rational drug design or crystal engineering. Sherrill is also studying how what we learn from small systems translates to large systems, and has developed efficient software to perform computations of intermolecular interactions. The computer programs traditionally used to implement electronic structure methods are complicated and lengthy, easily reaching more than one million lines of source code. They are also time-consuming for larger molecules or for using more accurate models. Sherrill is developing a faster, modular approaches with reusable software components that can be incorporated directly into multiple quantum chemistry packages.

**Sudhakar Yalamanchili**  
*Software Challenges of Heterogeneous Architectures*

Yalamanchili, professor in the School of Electrical and Computer Engineering, develops new scalable modeling and simulation infrastructures to support research efforts in many core architectures, and studies the integration of interconnection networks and memory systems. In the context of heterogeneous computing, he focuses on GPU accelerators and supporting execution environments. He also investigates the impact of the physics of operation (e.g., thermal) on system performance and driving architecture operation and design.

**Ada Gavrilovska**  
*Experimental Systems Research*

Gavrilovska of the School of Computer Science, is involved in large-scale collaborative projects on high-performance systems software, including DOE-supported research for exascale computing. She is currently part of the UNITY S&O project developing systems support for more efficient use of non-volatile memories in upcoming high-end computing platforms. Ada is part of SICM ECP project focused on the systems software gaps in dealing more broadly with memory heterogeneity at exascale. Her recent work has also included performance and efficiency management for heterogeneous compute resources and high-performance fabrics.

**Deidre Shoemaker**  
*Probing our Universe in Gravitational Waves*

Shoemaker, Dunn Family Professor in the School of Physics, studies the gravitational inter actions of compact binaries, interacting double black holes that emit gravitational radiation. She also predicts and tests the theory of relativity in the strong-field regime. As gravitational physics morphs into an observation-driven field, populated by data from detectors like the Laser Interferometer Gravitational-wave Observatory (LIGO), the field of numerical relativity is solving the binary black hole problem. There is now a unique opportunity to probe our universe in gravitational waves, revealing the strong-field interactions both theoretically and experimentally.
Research Highlights (continued)

P.K. Yeung
Simulating the Behavior of Turbulent Flows

Yeung of the Daniel Guggenheim School of Aerospace Engineering uses high-resolution direct numerical simulations to study the fundamental behavior of turbulent fluid flow using large-scale computation. His work examines turbulent mixing and dispersion at the highest Reynolds number possible with available computing. He also develops algorithms for scientific computing to allow the largest simulations possible. Current simulations are run on NSF and the DOE-supported systems with tens or hundreds of thousands of parallel processors. Results from a large computation performed on the NSF’s Blue Waters supercomputer were recently reported in the Proceedings of the National Academy of Sciences.

Suresh Menon
Computational Fluid and Combustion Dynamics

Menon is the HighTower Professor of Engineering in the Daniel Guggenheim School of Aerospace Engineering. He is a world-renowned expert in large-eddy simulation of turbulent reacting and non-reacting flows and has developed unique multi-scale parallel simulation capabilities to study condensed phase detonation and post-detonation afterburning as well as pollutant formation and combustion in gas turbine and ram-jet engines. Menon is a principal investigator for a wide range of research projects funded by NASA, Air Force, Office of Naval Research, and Department of Energy.

Srinivas Aluru
Genomes Galore - Core Techniques, Libraries, and Domain-Specific Languages for High-Throughput DNA Sequencing

Aluru and his collaborators are investigating a key-capacity building activity to facilitate pervasive use of parallelism by bioinformatics researchers and practitioners. The project aims to empower the broader community to benefit from clever parallel algorithms, highly tuned implementations, and specialized HPC hardware, without requiring expertise in any of these. The software libraries will be released as open source, further development, enhancements and incorporation by the community in order to bridge the data deluge in all areas of life sciences due to the recent emergence of a variety of high-throughput DNA sequencing instrumentation, and the concomitant large-scale computation. His work examines turbulent mixing and dispersion at the highest Reynolds number possible with available computing. He also develops algorithms for scientific computing to allow the largest simulations possible. Current simulations are run on NSF and the DOE-supported systems with tens or hundreds of thousands of parallel processors. Results from a large computation performed on the NSF’s Blue Waters supercomputer were recently reported in the Proceedings of the National Academy of Sciences.

David A. Bader and E. Jason Riedy
GRATUEFUL: Uplift Analysis Tackling power Efficiency, Uncertainty and Locality

With a $2.9 million grant from the Defense Advanced Research Project Agency’s Power Efficiency Revolution for Embedded Computing Technologies program, David Bader and Riedy are developing high performance yet energy efficient graph analysis algorithms that move computations and their results to the field rather than housing them in supercomputing centers. The grant is one piece of a national effort to increase computational power efficiency and maximize the ability to withstand errors at the application and hardware levels.

Hong (Polo) Chau
Understanding and Fortifying Machine Learning Based Security Analytics

With a $1.2 million National Science Foundation grant, Chau and his collaborators, Taesoo Kim, Wenke Lee and Le Song, are developing a systematic, foundational, and practical framework to understand attacks targeting machine learning (ML) abilities, quantify their vulnerabilities, and fortify ML based security analytics. To determine how adversaries can attack ML based security analytics, Chau will study the theoretical vulnerabilities of ML algorithms and how attackers may launch sophisticated causative attacks even when the choices of ML models and algorithms are not known to lead to new kinds of adaptive cyber defense systems. The ultimate aim of the four-year project is to change how machine learning based systems will be designed, developed, and deployed.

Richard Fujimoto
Participatory Modeling of Complex Urban Infrastructure Systems

Armed with a $2.5 million National Science Foundation grant, Fujimoto is creating new ways to holistically model interactions between disparate urban infrastructure systems – transportation, energy generation, water, sewage, etc. – to better understand environmental impact, improve sustainability, and increase resiliency. Using Atlanta as a test bed, Fujimoto is working to develop innovative new tools needed to create a comprehensive understanding of the interactions and interdependencies of water, energy, transportation, and other utility systems at the local, regional, and national levels.

Edmond Chow
Asynchronous Iterative Solvers for Extreme-Scale Computing

Chow is helping to lay the foundation for the next generations of supercomputers. Fueled by a $2.4 million grant from the U.S. Department of Energy, Chow is working to develop new computer algorithms for solving linear and nonlinear equations. Once realized, these solvers will replace the current generation of mathematical tools used to determine solutions to particular problems, which are being impeded by synchronous operations. These operations create a bottleneck due to the sequence in which processors must perform calculations. The newly proposed asynchronous techniques will enable each processor to operate independently, proceeding with the most recently available data, instead of waiting to sync with the remaining processors. The three-year project is part of the U.S. government’s initiative to build an exascale supercomputer by 2023.

Jimeng Sun
High-throughput Phenotyping of Electronic Health Records using Multi-Tensor Factorization and Deep Learning for Predicting Health Outcomes

Because they contain a number of different data points, electronic health records (EHRs) are a rich resource for clinical research. However, leveraging EHRs is challenging because of their orientation to health care business operations, hospital-specific databases, and high levels of erroneous entries. Sun is using a $2.1 million NSF grant to address these challenges by developing a streamlined computational framework for extracting concise, meaningful concepts from EHR data. Sun’s recent work also involves collaborations with investigators to develop interpretable deep learning models on large-scale EHR data to predict health outcomes utilizing GPU servers ideal for deep learning computation.

Rich Vuduc
A Parallel Tensor Infrastructure (ParTI!) for Data Analysis

Vuduc and Jimeng Sun are exploring emerging and future uses of efficient parallel algorithms and software for data analysis and mining applications through tensor networks. Tensor solvers are powerful tools that can be used to describe complex relationships between geometric vectors and specific n-dimensional structures. Tensors are finding applications in signal and image processing, computer vision, health care analytics, and neuroscience. Despite this demand however, there is no comprehensive, high-performance software designed for tensor networks to work with server systems that may have many parallel processors. Designing the first such infrastructure, which will be known as Parallel Tensor Infrastructure (ParTI!), is Vuduc’s overarching project goal. The broader impact of this work will be to make the use of tensors much easier and more widespread in a variety of data processing domains.
Antibiotic resistance is rapidly becoming one of the most critical public health threats facing us, yet for many years, the number of new antibiotics has steadily decreased. A number of techniques are now being brought to bear on this looming crisis, one of which is identifying new targets in bacteria and new drugs that can reach them. The Lab for the Simulation of Bacterial Systems (SimBac) at Georgia Tech is working to better understand these potential targets and design the drugs that can inhibit them through detailed atomistic computer simulations.

Gram-negative bacteria are a common source of human infection and include such well-known species as Escherichia coli, Nesseria gonorrhoeae, and Salmonella enterica. One of their key protective mechanisms is a triple-layered cell envelope composed of an inner and outer membrane and a porous cell wall in between. The distinct properties of each layer present an enormous challenge to antibiotics, which must be capable of crossing all of them efficiently to be effective. However, if an antibiotic target could be found in the outer membrane, it would be much simpler to design antibiotics against it. The SimBac lab, run by Assistant Professor James C. Gumbart in the Georgia Tech School of Physics, is composed of a multidisciplinary team of researchers attempting to do just that.

High-Performance Computing

Even a system containing a single protein solvated in water requires a few tens of thousands of atoms; those such as the sizer of cell envelope require a couple million. Calculating all the forces between atoms and updating their positions over time, the fundamental step in an MD simulation, requires tremendous computational resources. The SimBac lab uses a variety of platforms, including clusters of CPU-only nodes, GPUs, and combinations of the two, all running the NIH-funded software, NAMD, to carry out these simulations. The Partnership for Advanced Computing Environment at Georgia Tech has been instrumental in assisting with the construction of and supporting the computational resources necessary to elucidate the inner workings of bacteria one atom at a time.

Molecular Dynamics

Experimental techniques currently cannot provide both the atomic-scale resolution and the dynamic information necessary to characterize processes such as import of nutrients, insertion of proteins, and export of drugs at the cell envelope. Computational methods, on the other hand, can provide all of this and more. Starting with experimentally determined structures, the SimBac lab creates whole systems of proteins, membranes, and more in order to resolve how they interact with one another to protect bacteria. Molecular dynamics (MD) simulations bring these systems to life, allowing for the observation of dynamical processes up to the microsecond time scale currently.

School of Computational Science and Engineering

Computational science and engineering is a discipline devoted to the study and advancement of computational methods and data analysis techniques to analyze and understand natural and engineered systems. The School of Computational Science and Engineering (CSE) solves real-world problems in science, engineering, health, and social domains, by using high-performance computing, modeling and simulation, and large-scale big data analytics.

CSE Chair Helps Set White House HPC Agenda

CSE Chair David Bader participated in the National Strategic Computing Initiative Anniversary Workshop held in July 2016 in Washington, D.C. Created via an executive order from then-President Barack Obama, the NSCI is responsible for ensuring the U.S. continues to lead HPC development and utilization in coming decades.

CSE Launches Strategic Partnership Program

The inaugural symposium for CSE’s Strategic Partnership Program brought together HPC experts to tackle some of industry’s challenges regarding HPC. Firms represented included Accenture, Booz Allen Hamilton, HPCC Systems, IBM, Keysight Technologies and NVIDIA. Leaders and program managers from Oak Ridge National Laboratory, Pacific Northwest National Laboratory, Sandia National Laboratories, and U.S. Department of Defense also attended the workshop.

Paper Honored as First to Earn ACM “Results Replicated” Badge

CSE Professor and Co-Executive Director of the Institute for Data Engineering and Science (IDEaS) Srinivas Aluru, along with a team of Georgia Tech Ph.D. students, produced a paper that was the first to ever be awarded a new designation from the ACM and SIGHPC for research integrity showing successfully duplicated results.

DOE-funded Project Sets Stage for Next Generation of Supercomputers

CSE Associate Professor Edmond Chow is leading a project funded by the U.S. Department of Energy for $2.4 million to develop new computer algorithms for solving linear and nonlinear equations that will ultimately help pave the way for the next generation of supercomputers.

In FY2017, the School of CSE had an average of $550k in research expenditures per faculty member (Highest @ Georgia Tech). Total FY17 research expenditures $6.6m. Total awards across 46 active projects $39m.
The Center for High-Performance Computing

Georgia Tech is now an established leader in computational techniques and algorithms for high-performance computing (HPC) and massive data. Associate Professor Rich Vuduc serves as the executive director of the center after succeeding CSE Chair David Bader on May 15, 2017. Under the guidance of this leadership, the center aims to advance the state-of-the-art in high-performance computing, and exploit HPC to solve high-impact, real-world problems. The inherent complexity of these problems necessitates both advances in HPC and breakthroughs in our ability to extract knowledge from and understand massive complex data. The center’s focus is primarily on algorithms and applications, and it will be co-located with IDEaS (see facing page) in the upcoming Coda building in Tech Square.

Advances in HPC are essential to keep pace with the largest and most complex computational needs created by our rapidly evolving society. For example, modern research programs often involve the use of computationally demanding and detailed multi-level simulations, big data analyses, and large-scale computations.

“HPC scientists devise computing solutions at the absolute limits of scale and speed.”

HPC scientists devise computing solutions at the absolute limits of scale and speed. In this compelling field, technical knowledge and ingenuity combine to drive systems using the largest number of processors at the fastest speeds with the least amount of storage and energy use. Attempting to operate at these scales pushes the limits of the underlying technologies, including the capabilities of the programming environment and the reliability of the system. HPC researchers develop efficient, reliable, and fast algorithms, software, tools and applications. The software that runs on these systems must be carefully constructed and balance many factors to achieve the best performance specific to the computing challenge.

The field involves parallel processing with tightly integrated clusters consisting of hundreds to hundreds of thousands of processors, terabytes to petabytes of high-performance storage, and high bandwidth/low latency interconnects that consume megawatts of power. A wide variety of architectures are used that differ in the composition and balance of cores (such as CPUs, GPUs, and hybrid architectures).

The Institute for Data Engineering and Science

Data science foundations. Data-driven discovery.

The Institute for Data Engineering and Science (IDEaS) is the unifying entity for Georgia Tech’s data science research, applications, and education. IDEaS connects government, industry, and academia to advance foundational research, accelerate the adoption of data science technology, and educate future data science leaders. Led by Co-Executive Directors Srinivas Aluru and Dana Randall, both professors in the College of Computing, IDEaS is dedicated to several goals:

Connect and Inform
IDEaS leverages expertise and resources from throughout Georgia Tech and external partners to define and pursue challenges, create meaningful partnerships, and offer accessible resources. IDEaS provides the connectivity necessary to keep pace with evolving problems, research, and discovery.

Drive and Amplify
IDEaS advances foundational research in areas such as machine learning, high-performance computing, and algorithms. It also drives research within disciplines such as precision medicine, materials science, energy, and smart cities. IDEaS gives researchers the resources they need to innovate and pursue challenges on a much bigger scale than would otherwise be possible.

Analyze and Solve
IDEaS equips researchers to pursue the most important problems, often connecting with industry to drive innovation and speed adoption to achieve economic and societal impact. IDEaS provides partners with direct access to experts at the leading edge of research and applications who possess deep knowledge and vision of the path ahead.

Educate and Inspire
IDEaS is dedicated to developing and promoting innovative educational and training programs. Georgia Tech is a research leader in computing, engineering, and data science, and offers a master’s in analytics and a master’s in quantitative and computational finance. Georgia Tech also offers a Ph.D. program in machine learning formed by collaboration among the colleges of Computing, Engineering, and Sciences.

Other academic and co-curricular opportunities include FLAMEL (From Learning, Analytics, and Materials to Entrepreneurship and Leadership doctoral traineeship program), the Data Science for Social Good internship program, and a student-run data analytics center.
A critical question today is: How can we rethink computing technology to restart the historic explosive performance growth? The Center for Research into Novel Computing Hierarchies (CRNCH) at Georgia Tech seeks answers to this question through its interdisciplinary research programs.

CRNCH comprises international experts who represent all areas of the computing stack. Together, we explore novel holistic strategies for computing that are fundamentally different from computing approaches of the past. “The entire field of HPC is shifting because of the end of Moore’s Law. We need a multi-disciplinary approach to overcome this crisis. Georgia Tech’s CRNCH center is unique in the world for focusing on solutions to the problem of post-Moore computing. There’s really nothing else like it anywhere,” says CRNCH Founding Director Tom Conte.

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Quantum Information Sciences
Information can be encoded into selected states of quantum systems. A quantum system is any particle or small structure whose behavior is governed by quantum mechanics. Examples of such systems are electron orbitals in ions or atoms, polarization in photons, and electrical current loops in superconductors. When a number of these quantum bits are collected together into specially prepared “entangled” states, they can be used to execute certain algorithms far more efficiently than a classical computer could.

Brain-Inspired Computing
Brain-inspired computing takes what we know about how the brain operates and applies it to new computing technologies. This allows us to solve problems at which the brain is highly skilled, such as efficiently recognizing and classifying patterns in text, audio, and images. Investigations into brain-inspired computing strive to design computers that can operate at low power, have high tolerances for faults, and can learn from input data — much like a brain.

Approximate Computing
Today’s computers often calculate results to a degree of precision and accuracy that is much higher than required. Approximate computing strives to remove this wasted processing to both increase computing speed and reduce power requirements. In addition, certain kinds of electronic devices can be made to run very fast and be highly energy efficient, but in so doing they produce random errors. Creating computers that use these methods requires developing new algorithms, new computer languages, and new computer architectures.

Design Sciences
Harnessing new devices and technologies requires new design methodologies. Changes to devices will ripple through the design stack, affecting architectures and software. Mapping the design space helps designers make the most effective choices for hardware and software design. CRNCH faculty are inventing new algorithms and models to create revolutionary new computing systems from revolutionary new technologies.
Once it opens for business in 2019, the approximately 750,000-square-foot, mixed-use project will be home to Georgia Tech’s interdisciplinary high-performance computing (HPC) center and the School of Computational Science and Engineering (CSE).

Along with Georgia Tech's HPC center and CSE, the Coda complex will feature 620,000 square feet of office space dedicated to creating unparalleled collaboration between academia and industry. A central core connecting the building’s two towers will in part foster this collaboration. Connecting every floor from top to bottom, this core will be a gathering place within this unique building.

The Coda project will also include 40,000 square feet of retail space, which will incorporate the adaptive reuse of the historic Crum & Forster Building. Highlighted by a massive interactive media wall, this area will be accessed by an open-air plaza that is destined to become an outdoor living room for Midtown Atlanta.

Coda represents the next phase of Georgia Tech's Technology Square – Atlanta’s most sought-after neighborhood for technology and science-based companies. Tech Square connects the intellectual capital of Georgia Tech with the thriving business community in Midtown Atlanta. It is a magnet for tech startups and university spinoffs and serves as an urban main street for the campus and community.

Along with the new NCR world headquarters under development and Tech Square Labs, the eight-block Tech Square campus will soon total three million square feet of commercial space, with more than $1 billion invested.

With its innovative design that embodies the next generation of office space and its position at the heart of the city’s tech ecosystem, Coda at Tech Square will be an iconic landmark for Georgia Tech and the city of Atlanta. PACE, an on-campus charter of the Office of Information Technology, is specifically created to support the creation, operation and use of HPC for scientific research on campus. This unique charter enables discoveries by providing the necessary bridge between state-of-the-art cyberinfrastructure and world-class scholars, enabling a powerful combination of the two. PACE facilitates research efforts and fosters strategic partnerships to provide Georgia Tech researchers with an unrivaled advantage, empowering them to lead their disciplines for the advancement of science and society across the globe. Each day, PACE supports all disciplines within the Georgia Tech research community with state-of-the-art data and computational science cyberinfrastructure coupled with expert consultation to help create the technological research university of the 21st century.

For more than 80 years, the Georgia Tech Research Institute (GTRI) has built a reputation as one of the world’s premier applied research and development organizations. Each day, GTRI’s HPC expertise is used to solve some of the toughest problems facing government and industry across the nation and around the globe. In FY 2016, GTRI conducted $370 million in sponsored research. Major sponsors of GTRI research include United States Department of Defense agencies, the state of Georgia, non-defense federal agencies, and private industry. On-site computing facilities include multiple raised floor datacenters and over 10,000 CPU cores with accelerators, high-speed storage and state-of-the-art networking.

CODA

Announced in April 2016 by Georgia Tech and renowned Atlanta developer John C. Portman and Associates, Coda at Tech Square will be a uniquely collaborative development.

Georgia Tech University Contacts

Srinivas Aluru
Professor, School of Computational Science and Engineering
Co-Executive Director, Institute for Data Engineering and Science
Ph.D., Iowa State University, 1994 IEEE and AAAS Fellow, NSF CAREER Award

David A. Bader
Professor and Chair, School of Computational Science and Engineering
Executive Director, High Performance Computing
Ph.D., University of Maryland, 1996 IEEE and AAAS Fellow, NSF CAREER Award

Thomas “Tom” Conte
Professor, School of Computer Science
Professor, School of Electrical & Computer Engineering
Founding Director, Center for Research into Novel Computing Hierarchies
Ph.D., University of Illinois, 1992 IEEE Fellow, NSF CAREER Award

Lance Fortnow
Professor and Chair, School of Computer Science
Ph.D., Massachusetts Institute of Technology, 1989 ACM Fellow

Dana Randall
ADVANCE Professor
Co-Executive Director, Institute for Data Engineering and Science
Ph.D., University of California, Berkeley, 1994 ANS Fellow, NSF Career Award

Paul Manno
Senior HPC Architect
Senior System Administrator
Landman Cluster Administrator
Partnership for an Advanced Computing Environment
Office of Information Technology

Rich Vuduc
Associate Professor, Associate Chair for Academic Programs
Director, CSE Graduate Programs
Executive Director of ChiPSC
Ph.D., University of California, Berkeley, 200 NSF CAREER Award