Georgia Tech | IPaT
Institute for People and Technology

Annual Report 2013

A student uses the Remotoscope, a smartphone attachment developed by Georgia Tech researchers to help diagnose ear infections.

innov

Message From the Director

This year has been one of great growth for the Institute for People and Technology. We nearly doubled our research revenue, surpassing $18 million last year, and we substantially increased the number of Georgia Tech faculty working with our partners, research facilities and student programs.

Much of our revenue growth came from our health systems portfolio of research as we continue to work with a growing set of state, federal, non-profit and corporate partners. We responded to this growth with the creation of a new and unique research infrastructure for health systems data analysis and the creation of our new **Health IT Showcase**. We also demonstrated our leadership in Health IT at the annual Healthcare Information and Management Systems Society (HIMSS) conference — IPaT was the only academic institution invited to the HIMSS Interoperability Showcase. Another area of growth is our partnership with **Children's Healthcare of Atlanta**, announced in 2012, that has already inspired solutions that will improve the lives of children and their families. For example, one of our award-winning papers provided clinical evidence for the use of mobile health approaches to improve pediatric asthma care.
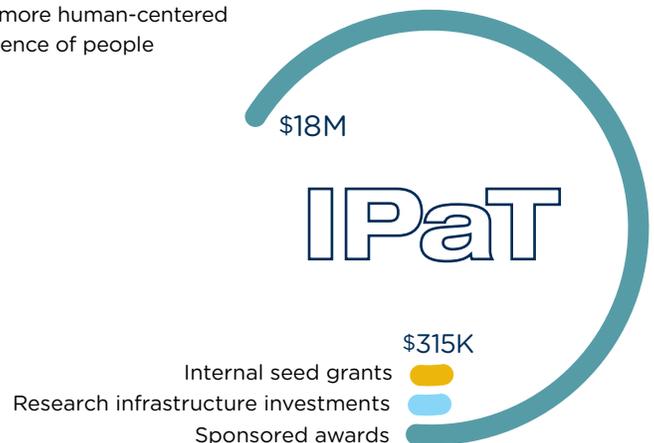
In STEM education with our Direct to Discovery (D2D) program, we connected classrooms in Ireland and Georgia as these students learned about local ecologies and transatlantic cultures. IPaT also helped to develop leading-edge research programs in the area of first responder and citizen safety technologies that will exceed $5 million in funding for Georgia Tech this fiscal year.

We launched two new community laboratories this past year. Our campus community is flourishing with the development of **GT Journey**, helping Georgia Tech students design applications, access data, and create web services to improve the GT campus and surrounding community. In partnership with GT-RNOC, we've already released some of the top entries as services for the GT campus. Going further, our newly announced partnership with **Midtown Alliance** will allow us to support the larger Midtown Atlanta community with innovative approaches for improving the "live, work, play" experiences of our neighboring community.

These brief comments are just a snapshot of our many noteworthy achievements over the past year, and at the center of it all is people. IPaT's mission is to build a future with more human-centered technology, and we hope you will continue to explore with us the convergence of people and technology.

Elizabeth Mynatt
Executive Director

$18M

IPaT

$315K
Internal seed grants
Research infrastructure investments
Sponsored awards

ation
in action

About IPaT

The Institute for People and Technology (IPaT) connects industry, government and nonprofit leaders with Georgia Tech's world-class researchers and innovations to transform media, health, education and humanitarian systems. IPaT integrates academic and applied research through living laboratories and multidisciplinary projects to deliver real-world, novel solutions that balance the needs of people with the possibilities of new technologies.

IPaT creates transformative opportunities, builds powerful partnerships and maximizes societal impact of the exciting research being done at Georgia Tech through our "3 T's" approach:

T ransdisciplinary Research
IPaT consolidates advances in system science and engineering, management and policy, information technology, and human-centered design.

T ranslational Impact
IPaT deploys living laboratories, testbeds, and datasets to facilitate the translation of research findings to practical applications.

T ransformational Leadership
IPaT creates innovation crossroads for researchers, industry partners, government partners, and other stakeholders to meet and develop transformative solutions for complex societal challenges.

Health
Advancing health through transforming healthcare delivery and promoting wellness.

Education
Transforming the way people learn and teach.

Media
Shaping how content is created, distributed and consumed.

Humanitarian Systems
Empowering communities to support and sustain each other.

IPaT
The convergence of people, technology and enterprises

3T approach

Industry Partners

Becoming an IPaT Partner is the quickest way to bridge the gap between groundbreaking research and real-world solutions. Located in Atlanta's Technology Square, the Institute for People and Technology serves as the gateway to Georgia Tech's research expertise and technology solutions.

Researchers and experts in various sectors expand the boundaries of current knowledge to discover new and exciting possibilities. In IPaT's "living laboratories", we refine these ideas by rigorous testing and prototype development. Together with our partners in industry, government, and the nonprofit sector, we investigate innovative solutions to difficult problems. From concept to deployment, IPaT Partners set the standard in a wide area of fields, working to enhance human potential through technological innovation.

Consultations with world-class experts

IPaT Partners have direct access to multidisciplinary teams of world-class researchers, and opportunities to discover the future direction of consumer technology.

Opportunity to utilize Georgia Tech resources

With IPaT as facilitator and source of innovative research, IPaT Partners are able to utilize GT testbeds and datasets, and interact with real users through IPaT Living Labs.

Develop strategic relationships

For IPaT Partners, the Institute serves as a gateway to the development of strategic relationships with various influences: researchers, policymakers, and other industry partners.

IPaT's mission is to drive human-centered innovation by connecting organizations with Georgia Tech. As the gateway to one of the world's great research powerhouses, IPaT helps our industry partners transform blue-sky ideas into valuable technology solutions for the benefit of people and the world.

Elizabeth Mynatt, Executive Director, Institute for People and Technology
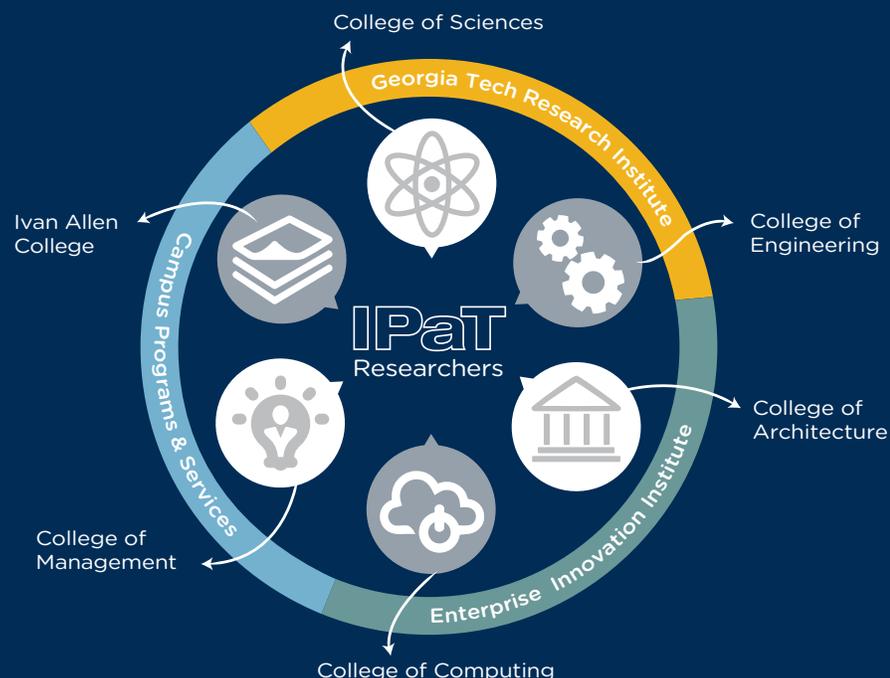
IPaT Network

converging

Faculty

The Institute for People and Technology is widely known for its emphasis on multidisciplinary research. Our team of over 140 academic and applied researchers, representing a diverse set of academic disciplines, comes from all six Georgia Tech colleges and various institutes. These include the Georgia Tech Research Institute, the Enterprise Innovation Institute, and Office of Information Technology.

Students

Hundreds of bright, talented Georgia Tech students are at the heart of many IPaT projects, including: IPaT's Living Labs, the GT Journey initiative, and the Convergence Innovation Competition. Each semester, our students share their incredible work with industry, media, and the Atlanta startup community at our extensive research showcases.

College of Sciences

Georgia Tech Research Institute

College of Engineering

Ivan Allen College

IPaT Researchers

College of Architecture

Campus Programs & Services

College of Management

Enterprise Innovation Institute

College of Computing

Greg Turk and Karen Liu Win SIGGRAPH Awards

Greg Turk and Karen Liu, both School of Interactive Computing faculty members, received awards from SIGGRAPH for ground-breaking research in computer graphics animation. Turk received the Computer Graphics Achievement Award for his contributions to physically-inspired mathematical application in graphics and Liu was recognized as the 2012 Significant New Researcher in recognition of her pioneering contributions in the field of computer animation, particularly her work in optimization and control of human motion.

Improving City Bike Infrastructure One Click at a Time

Georgia Tech researchers Chris LeDantec (Digital Media) and Kari Watkins (Civil Engineering) have developed Cycle Atlanta, a smartphone application which uses GPS to record a rider's route in real-time, generating data to help the City of Atlanta improve biking infrastructure. It also allows users to report problems along their route, and includes an interactive map to see where other cyclists are riding in Atlanta.

IPaT Builds Partnership with Georgia Department of Community Health

The IPaT-Department of Community Health partnership continued to grow in fiscal year 2013 with the State leveraging Georgia Tech expertise in the area of Health Information Technology.

Georgia Tech's People & Technology Forum 2012 a Huge Success

The GT People & Technology Forum, held November 12–13, drew almost 250 attendees during its two-day program. The majority of visitors were current and potential IPaT industry partners, with more than fifty companies participating. Day one featured Ralph de la Vega, president and CEO of AT&T Mobility, whose tremendous opening keynote explored a range of short and long-term commercial possibilities. Attendees also experienced more than one hundred research demonstrations.

IPaT 2012–2013

September 2012
Cycle Atlanta

October 2012
GT Journey

November 2012
People & Technology Forum

people, tech

Launching GT Journey

Spearheaded by Georgia Tech's Research Network Operations Center (GT-RNOC), IPaT launched GT Journey in October 2012, a three-year initiative to develop a platform for creating and sharing campus centric applications, web services and experiences. The Fall 2012 Convergence Innovation Competition (CIC), which focused solely on GT Journey, brought together students from various disciplines across campus to develop and innovate applications and services that benefit Georgia Tech. Winning entries were made available campus wide to all students, staff and faculty via GT Mobile (m.gatech.edu).

Georgia Tech/CDC Grants

Georgia Tech and the Centers for Disease Control and Prevention (CDC) announced the Georgia Tech/CDC Research Awards, which provide funding to foster scientific collaboration between investigators from the two institutions.

Tennenbaum Institute Welcomes New Managing Director

Ronald L. Johnson, retired 2-Star Army General and graduate of the School of Industrial & Systems Engineering (ISyE), became Managing Director of the Tennenbaum Institute in January 2013. IPAT's Tennenbaum Institute unites academic, government and corporate experts to create business models to facilitate real, large-scale enterprise transformation.

Computing + Journalism Symposium

The Computation + Journalism Symposium brought more than 170 journalists and researchers to Georgia Tech to discuss computation's impact on the world of news, and what the future might hold. Topics included how to incorporate big data into the process of journalism, new methods of distributing the news, and the use of social media in newsgathering. The event was heavily tweeted and became the second trending topic in Atlanta that day.

Georgia Tech and Children's Healthcare Receive 2013 Deal of the Year Award

Program Director for Georgia Tech/Children's Healthcare of Atlanta Research Partnership, Sherry Farrugia, attended the Georgia Bio Annual Awards Dinner to accept the 2013 Deal of the Year Award. Georgia Tech and Children's received the award in recognition of their $20 million alliance, strengthening the mutual research commitment to developing technological solutions for improving children's health.

IPaT Releases Georgia Tech's Media Outlook 2013

The Institute for People and Technology released Georgia Tech's Media Outlook in February 2013. GT Media Outlook is an annual interactive publication that presents Georgia Tech's collaborative stance on the future of media based on work with industry partners, and other academic institutions. Media Outlook 2013 contains a detailed discussion of five trends we can expect to see increase in importance in the next 5–7 years: Personalization, Living Data, Collaboration, Nimble Media, and Mixed Reality.

Tech's healthcare lab, SimTigrate, to test possible solutions for managing electronic health records (EHR) at Childrens Healthcare of Atlanta Sibley Heart Center. By incorporating simulation with live role playing, the Sibley Heart Center's physicians were able to evaluate different health delivery scenarios while testing devices for EHR access and use. The research challenged their initial assumption, as the physicians were able to select new flip-screen tablets based on medical evidence instead of relying on personal preferences.

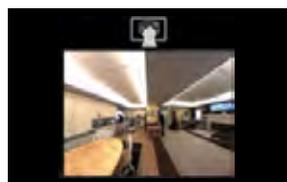## Georgia Tech Researchers Develop Touch-Sensitive Robot Arms

Researchers in the Georgia Tech Healthcare Robotics Lab have developed a control method that gives robot arms the ability to navigate using touch. In contrast to current strategies which discourage contact by robot arms, researcher Charlie Kemp's group has developed tactile sensors that cover the entire robot arm, which enables the robot to navigate through clutter and play more assistive roles: healthcare and search-and-rescue, for instance. The research was documented in a New York Times article "Researchers Put Sense of Touch in Reach for Robots."

January 2013
Computation + Journalism Symposium

January 2013
Deal of the Year Award

February 2013
Media Outlook 2013

hnology and

From Atlanta to Salt Lake City: Looking Through the Magic Window

The Magic Window is an immersive, collaborative experience that began several years ago as a class project. It evolved into a Consumer Electronics Show demo, and is now used throughout IPaT to showcase our living labs. The translational project combines WebRTC based telepresence, augmented reality, gesture controls, software defined networking technologies, and allows for rapid prototyping. GT researchers demonstrated Magic Window live at this year's GENI Engineering Conference, and included the automation and instrumentation of the Aware Home in Atlanta from Salt Lake City via the SDN enabled GENI network. The Magic Window project is a collaboration between Georgia Tech's Interactive Media Technology Center, GT-RNOC, and Augmented Environments Lab.

Georgia Tech Helps Children's Heart Center Select Device for Electronic Medical Records

Georgia Tech researchers teamed up with the Chief of Children's Physician Group, Pediatric Cardiologist Patrick Frias, at Georgia

TI Hosts First International Enterprise Transformation Workshop

On March 18, The Tennenbaum Institute hosted ENTR2013, the first international workshop on enterprise transformation. The workshop brought together thought leaders on enterprise transformation, an interdisciplinary field that addresses the enterprise as a system and considers the phenomena associated with designing, managing, and transforming enterprises.

IPaT Only Academic Institution to Present at HIMSS Interoperability Showcase

The March 2013 HIMSS Conference in New Orleans provided a valuable opportunity to highlight IPaT's efforts in healthcare IT. Visitors to the Interoperability Showcase within the conference were able to witness demonstrations and exhibits by the Interoperability and Integration Innovation Lab (I3L). One such case, the simulation of a seamless transfer of patient data between different healthcare systems, involved the use of interoperability solutions developed by Georgia Tech's I3L.

Convergence Innovation Competition

GT-RNOC and IPaT successfully produced the 7th and 8th editions of GT's flagship student competition—the Convergence Innovation Competition (CIC). The Fall 2013 CIC focused on GT Journey and attracted over 100 students to build applications and services that benefit campus. The Spring 2013 CIC continued the previous years' successes in promoting industry directed student innovation. Supported by nearly half a million dollars in sponsorships from AT&T, Cisco, Panasonic, General Motors and Hitachi, the competition focused on the 'Connectedness' of every day life as well as Future Networks. Over 400 students participated in this competition with the finalists invited to a showcase judging held at IPaT HQ where the winners in each category were announced.

IPaT Joins with Midtown Alliance to Build a Living Lab in the Heart of the City

In April 2013 Georgia Tech and the Midtown Alliance announced a partnership to build a new IPaT Living

Independence of Individuals with Autism • A Longitudinal Study of Follow Predictors on Twitter • I Am What I Eat: Identity & Critical Thinking in an Online Health Forum for Kids • A Text Message a Day Keeps the Pulmonologist Away.

IPaT Researchers Develop Device to Help Diagnose Ear Infections at Home

Ear infections are the most common reason parents take their children to a doctor. CellScope Inc., a west coast startup is using telemedicine and mobile technology to create a solution for diagnosing ear infections remotely. CellScope's at-home diagnostic system comprises an optical attachment for a smartphone along with an application. When attached and running, the system would turn the phone into a mobile otoscope, which parents would use to capture photos of the inside of their child's ear, thereby reducing unnecessary trips to the doctor. Through the Atlanta Pediatric Device Consortium, IPaT researchers in the Landmarc Research Center were tapped to help refine and optimize the application software to provide automatic zoom and crop, image preview, and calibration.

March 2013
First International Enterprise Transformation Workshop

April 2013
Convergence Innovation Competition

May 2013
Internet of Things Conference

enterprises

Lab in Atlanta's Midtown neighborhood. As is customary with other IPaT labs, this "urban computing" lab will emphasize interdisciplinary activity, rapid prototyping, and collaboration between entrepreneurs and academia. The first phase of the lab will be to develop an open software platform for building experimental mobile applications to enrich the Midtown neighborhood. Participants hope to create augmented reality tours, transportation and commuter applications, and new methods of community input and feedback. In future stages, the partner organizations aim to develop the Midtown area into a thriving innovation hub. "This partnership is a natural extension of our research in media, health and community-focused technologies that directly impact quality of life," said Elizabeth Mynatt, executive director of the Institute for People and Technology, who will lead the laboratory activities.

GVU at CHI 2013

The GVU and Georgia Tech community made a strong showing at the 2013 SIGCHI meeting in Paris, presenting seven papers:

Creativity Support for Novice Digital Filmmaking • TouchViz: A Case Study Comparing Two Interfaces for Data Analytics on Tablets • 'I Need to Try This!': A Statistical Overview of Pinterest • Investigating the Use of Circles in Social Networks to Support

AT&T Foundry Expands to Atlanta

In May 2013, AT&T announced the opening of the innovation center program AT&T Foundry in Atlanta, adjacent to Georgia Tech. The Atlanta-based Foundry will focus on technologies around AT&T's new home automation and security product, the "connected car" and other consumer platforms.

Georgia Tech Hosts Conference on Global Internet of Things and Machine-to-Machine Solutions

The conference explored some of the major efforts to provide common protocols and standards supporting Internet of Things and Machine-to-Machine communications solutions, including those within the open source community. Participants had the opportunity to share findings and discuss recent technological developments impacting society as a whole.

Aetna Foundation AirWatch Alcatel-Lucent Amdocs AstraZeneca AT&T Atlanta Journal-Constitution California Healthcare Foundation Centers for Disease Control and Prevention Children's Healthcare of Atlanta Cisco City of Atlanta Emory University General Motors Georgia Banker's Association Insurance Trust Georgia Department of Community Health Georgia Department of Economic Development Georgia Health Sciences University Google (including Motorola Mobility) Greenway Medical Gwinnett Technical College Harris Harvard University–SMART Henry J. Kaiser Family Foundation HIMSS (Healthcare Information and Management Systems Society) Hitachi HP Humana, Inc. IBM Intel Invesco Kimberly Clark Medicity Medikeeper MedStar Health Metro Atlanta Chamber Midtown Alliance Morehouse School of Medicine Navicure NTT Panasonic Automotive Systems Company of America Philips Healthcare Philips Lighting Qualcomm REACH Health, Inc. Relay Health Rubbermaid Healthcare SAIC Sensiotec SoloHealth Steelcase Technology Association of Georgia Telecommunications Industry Association Turner Broadcasting System, Inc. Vanderbilt University World Economic Forum

IPaT Industry Partners

Gregory Abowd Heyward Adams David Anderson Annie Antón Scott Appling Rosa Arriaga Turgay Ayer Paul Baker Rahul Basole Michael Best Doug Blough Doug Bodner Ian Bogost Jay Bolter Mark Braunstein Carrie M. Bruce Amy Bruckman David Burke Ann Carpenter Richard Catrambone GK Chang Polo Chau (Duen) Jiten Chhabra Myung Choi Russ Clark Ed Clarkson James Clawson Mark Clements Maribeth Gandy Coleman Josh Cothran David Cowan Brian Davidson Robert Delano Jim Demmers Megan Denham Paul Diederich Betsy DiSalvo Carl DiSalvo Mindy DiSalvo Ellen Do Jennifer DuBose Frank Durso Charles Eastman Keith Edwards Susan Embretson Barbara Ericson Irfan Essa Jeff Evans Brad Fain Sherry Farrugia Cara Fausset Nick Feamster Dan Fisk James Foley Jason Freeman Maysam Ghovanloo Eric Gilbert Ashok Goel Margarita Gonzalez Marla Gorges Alex Gray Beki Grinter Mark Guzdial Harley Hamilton Ayanna Howard Ron Hutchins Omer Inan Mary Ann Ingram Sheila Isbell Melody Jackson Nassim JafariNaimi Siva Jayaraman Jeremy Johnson Ron Johnson Brian Jones Charles Kemp Pinar Keskinocak Moon Kim Kristi Kirkland Ken Knoespel David Ku Phil Lamson Chris LeDantec Fuxin Li Karen Liu Alain Louchez Blair MacIntyre Vijay Madisetti Brian Magerko Warren Matthews Ali Mazalek Leigh McCook Helena Mitchell Tracy Mitzner Nathan Moon Janet Murray Elizabeth Mynatt Sham Navathe Michael Nitsche Tiffany O'Quinn Shane Owens Jessica Pater Celia Pearce Peter Presti Ed Price Claudia Rebola James Rehg Mark Riedl Scott Robertson Wendy Rogers Agata Rozga Steve Rushing Dan Russler Matt Sanders Jon Sanford Nicoleta Serban Jay Sexton Jonathan Shaw Stephen Sprigle Thad Starner John Stasko Julie Swann Matthew Swarts Andrea Thomaz Bill Todd Robert Todd Swaroop Vattam Brani Vidakovic Bruce Walker John Wandelt May Wang Kari Watkins Gil Weinberg Leanne West James White Graceline Racel Williams Jeff Wilson Clint Zeagler Ellen Zegura Hongyuan Zha Craig Zimring

IPaT Researchers