IPaT Spring Town Hall

January 31, 2019
IPaT Spring Town Hall

Learn about IPaT activities for Spring 2019

Jump start discussion on major new research initiative “The Future of Work at the Human Technology Frontier”

Talk with your colleagues, discuss new ideas, and swap Atlanta “snow” and Super Bowl stories

email: ipat@gatech.edu
New Faces

Queen Marrero
Financial Administrator

Greg McCormick
Georgia Smart
New Faculty

Matthew Gombolay
Interactive Computing

Leila Aflatoony
Industrial Design
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPaT Industry Innovation Day: Agile Health</td>
<td>April 18</td>
</tr>
<tr>
<td>IPaT Office Hours</td>
<td>Feb 11-13</td>
</tr>
<tr>
<td>Thursday Think Tanks</td>
<td>Thursdays, 3:30-5pm</td>
</tr>
<tr>
<td></td>
<td>Feb 7, 14, 21, 28</td>
</tr>
<tr>
<td></td>
<td>Mar 7, 14, 28</td>
</tr>
<tr>
<td>Convergence Innovation Competition (CIC)</td>
<td>Apr 10</td>
</tr>
<tr>
<td>Games for Change Jam</td>
<td>Feb 16, Mar 16, April TBD</td>
</tr>
<tr>
<td>IPaT Research Directors</td>
<td>Jan 24, Feb 12, Mar 7</td>
</tr>
<tr>
<td></td>
<td>8:30am-10am</td>
</tr>
<tr>
<td>IPaT Research Retreat</td>
<td>May TBD</td>
</tr>
<tr>
<td>IPaT Spring Schedule</td>
<td></td>
</tr>
</tbody>
</table>
Thursday Think Tanks

The TTT is a weekly gathering of the IPaT community to brainstorm about research, stay informed about ongoing work and opportunities, and help define IPaT strategy.

_Come interact with new and old colleagues and engage on topics of shared interest._

Spring 2019:

- **Jan 17**  Beth's Trend Report
- **Jan 24**  Bringing Innovation to Mild Cognitive Impairment in Aging Adults
- **Feb 7**  Wearable Technology and Society
- **Feb 14**  Virtual Reality Manufacturing Workplace
- **Feb 21**  TBD
- **Feb 28**  IPaT K-12 Engagement
- **March 7**  Design Thinking Methods for Research and Design
- **March 14**  Driverless Car Revolution
- **March 28**  Data Visualization and Visual Analytics

_email: ipat@gatech.edu_
Convergence Innovation Competition (CIC)  
**Wednesday, April 10**

**Bi-Annual competition**  
- Over 300 students annually  
- cic.gatech.edu

**Categories:**  
- Climate Solutions  
- Health on the Move  
- Players & Fans

Think your idea doesn't fit?  
Ask us—categories are intended to shape, not exclude.

**Benefits:** Prizes, Exposure, Contacts, IP retained, & Real world feedback

Submission deadline: @Midnight Wednesday 4/3/19

The CIC is held on the Atlanta campus and at Georgia Tech Lorraine

Interested? Questions?
Contact GT-RNOC  
rnoc-lab-staff@lists.gatech.edu
This summer in conjunction with the Georgia Farmer's Market Association & collaborating with other departments on campus we will bring a Pop-up Market to campus.

The goal is to bring fresh vegetables & fruits to assist students/staff who struggle with food insecurities.

Cost per share:
- $6 – SNAP
- $12 - Low income
- $25 - Regular cost
- $40 - Donation amount

Stay tuned for more details.

Klemis Kitchen is a food pantry on GT's campus that assist students with dietary needs and financial concerns which limits their access to proper nourishment.

IPaT dedicated the month of October to collect needed items for Klemis Kitchen.
Wearable Technology and Society: Artistic Collaborations
Clint Zeagler and Jay Bolter

Creating Georgia Tech’s Center for Computing and Society
Ellen Zegura, Carl DiSalvo, and Michael L. Best

Connecting Georgia Tech with the Future of E-Sports
Laura Levy and Anne Sullivan

The Mild Cognitive Impairment Empowerment Program’s Innovation Accelerator: Building a Diverse Coalition of Students, Faculty & Researchers to Address Aging-Related Cognitive Impairment
Craig Zimring, Jennifer DuBose, Gabrielle Campiglia, Brian Jones, Brad Fain, and Herb Valasquez

Building Capacity for Sustainable, Interdisciplinary, Smart Campus Research: A Needs Analysis
Russ Clark and Matt Sanders

Understanding the Impact of VR for Engineering Analysis on Workplace Practice
Chris Le Dantec and Thomas Kurfess
Shaping the future of human-centered systems, environments and technologies to promote satisfying, healthy and productive lives.

**Catalyze** interdisciplinary research between faculty, students, and industry.

**Provide** the continuity and capacity to address societal challenges.

**Advocate** for socio-technical change that improves the human condition.

**Educate** human-centered engineers, scientists, designers, business leaders, and policy makers.

---

**Research Pillars**

**Lifelong Health and Wellbeing**

**Smart Cities and Inclusive Innovation**

**Platforms and Services for Socio-Technical Systems**

**Shaping the Human Technology Frontier**

ipat.gatech.edu
Lifelong Health and Wellbeing

Aging

- ERC Preliminary Proposals on Aging

Pediatrics

- GT-CHOA Pediatric Technology Center (PTC) wins Georgia Bio Golden Helix 2018 Community Award
- Imlay funded Passport App for Kids deploying at the Aflac Cancer Center

NIH R21 (collaboration between Emory and GT, PI Kesar) funded "Innovative Biofeedback Interface for Enhancing Stroke Gait Rehabilitation"

New call for Diabetes Seed Grants

IPaT Research Infrastructure

- 3rd party HITRUST Certification for HIPAA compliant environment Year 1 is complete - no corrective items or deficiencies to be addressed
- Migration of CMS dataset to the shared Safebox environment, refreshed thin clients and servers, offsite backups; easier integration with campus and cloud services.

From pediatrics to aging, IPaT’s continuum of healthcare research is working to promote and enable vibrant and lifelong physical and mental health.
2019 ARC / Georgia Smart Community Challenge
GA Smart Community Corps

Connecting cities, revitalizing regions: the centrality of cities to regional development
Labour, work and regional resilience (Clark et. al)

Georgia Smart Webinar: Heaven or Hell? The Impact of Autonomous Vehicles on Urban Form
Smart Cities Digital Twin Summit

Georgia Healthy Cities workshops
Newsweek: How Driverless Cars Will Change the World, Dec 12
Hot Cities 2050 Jan 9
Urban and Regional Air Mobility, Jan 23

Through interdisciplinary expertise in technology and policy, IPaT is developing innovative approaches to shaping resilient and sustainable communities.
Shaping the Human Technology Frontier

GT Hosted ACM “Animal Computer Interaction Conference”, Dec 4-6 2018 (for the first time in the US) led by Melody Moore Jackson. GT researchers had a number of papers

**Fashion and Wearable Technology Panel** event to be held in Fall 2019. Collaboration between WCC and Fashion Group International Atlanta. Stay tuned for details....

"Nostalgic Futures” exhibition now on display in CULC

**Future of Sports** Technology VIP section launched (three thrusts are Wearable Tech for Performance, Augmenting the Fan Experience, and E-Sports)

We’re exploring new ideas in user experiences that foster creativity, stimulate learning and enable productive collaboration. Through this initiative, we’re researching and developing novel wearable computing, assistive, augmented reality, and gaming technologies.
Platforms and Services for Socio-Technical Systems

Sea Level Tools for Emergency Planning & Response
- 12 sensors deployed, 30 in production
- API and dashboard online at sealevelsensors.org
- Partnerships with City of Savannah, Chatham County, GDOT, Jenkins High School, etc

Project storage and API hosting work in progress for Smart Cities & Smart Campus projects (Marta, Coda, LBC, and the SeaLevel sensing).

Completed Phase 1 with Georgia Public Broadcasting – Understand current and future viewership patterns

Upcoming Think Tanks on VR and Manufacturing, and Visual Analytics

IPaT is merging physical and digital worlds with complex data analytic and communication capabilities. We are building new network infrastructure technologies with the goal of creating connected systems that support communities.
The Future of Work at the Human Technology Frontier

Elizabeth Mynatt
Executive Director
Distinguished Professor,
College of Computing
Shaping the Human Technology Frontier

We’re exploring new ideas in user experiences that foster creativity, stimulate learning and enable productive collaboration. Through this initiative, we’re researching and developing novel wearable computing, assistive, augmented reality, and gaming technologies.

Wearables to Mixed and Augmented Reality to Virtual Reality

Training
Simulation
AI driven characters and plot

Mixed intelligence

Learning
STEM / minority students
Aging adults and caregivers

Workforce (health, communities)

Implications of IoT, networked services and systems
Future of Work at the Human-Technology Frontier

Understanding and building the human-technology partnership

Manufacturing “cobot”

Immersive 3D virtual environment
Future of Work at the Human-Technology Frontier

Augmenting Human Performance

- Smart prosthetic arm and hand with sense of touch
- Deep learning applied to brain tumor detection and segmentation
- Soft robotic exoskeleton for strength and endurance
Future of Work at the Human-Technology Frontier

Fostering lifelong learning and learning with technology

Dashboard for teachers

Virtual reality training simulation
Future of Work at the Human-Technology Frontier

In Situ Support: Blurs the line between training, certification and work
Intelligent Infrastructure


The Internet of Things (IoT) has a potential economic impact of 2.7-6.2 trillion USD until 2025

Range of sized potential economic impacts

<table>
<thead>
<tr>
<th>Technology</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Internet</td>
<td>3.7–10.8</td>
<td></td>
</tr>
<tr>
<td>Automation of knowledge work</td>
<td>5.2–6.7</td>
<td></td>
</tr>
<tr>
<td>Internet of Things</td>
<td>2.7–6.2</td>
<td></td>
</tr>
<tr>
<td>Cloud technology</td>
<td>1.7–6.2</td>
<td></td>
</tr>
<tr>
<td>Advanced robotics</td>
<td>1.7–4.5</td>
<td></td>
</tr>
<tr>
<td>Autonomous and near-autonomous vehicles</td>
<td>0.2–1.9</td>
<td></td>
</tr>
<tr>
<td>Next-generation genomics</td>
<td>0.7–1.6</td>
<td></td>
</tr>
<tr>
<td>Energy storage</td>
<td>0.1–0.6</td>
<td></td>
</tr>
<tr>
<td>3D printing</td>
<td>0.2–0.6</td>
<td></td>
</tr>
<tr>
<td>Advanced materials</td>
<td>0.2–0.6</td>
<td></td>
</tr>
<tr>
<td>Advanced oil and gas exploration and recovery</td>
<td>0.1–0.5</td>
<td></td>
</tr>
<tr>
<td>Renewable energy</td>
<td>0.2–0.3</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: McKinsey Global Institute analysis

IoT Importance by Industry
 Advances in Artificial Intelligence Require Progress Across all of Computer Science

February 2017

Gregory D. Hager, Randal Bryant, Eric Horvitz, Maja Matarić, and Vasant Honavar

Over the last decade, the constellation of computing technologies referred to as artificial intelligence (AI) has emerged into the public view as an important frontier of technological innovation with potential influences in many realms. Advances in many disciplines related to AI, including machine learning, robotics, computer vision, natural language processing, inference, decision-making, and planning, are contributing to new-fielded products, services, and experiences. Offerings such as navigation systems, web search, speech recognition, machine translation, face recognition, and recommender engines have become part of the daily life of millions of people. Other applications coming to the fore include semi-autonomous and autonomous ground and air vehicles, systems that harness planning and scheduling, intelligent tutoring, robotics. More broadly, cyber-physical and robotic systems, incorporating varying degrees of AI technology, are poised to be fielded in a variety of real-world settings.
Reaping 70 Years of Investment

AS WE MAY THINK
A TOP U.S. SCIENTIST FORESEES A POSSIBLE FUTURE WORLD IN WHICH MAN-MADE MACHINES WILL HELP US THINK

DARPA Speech Recognition Benchmark Tests
NSF Future of Work at the Human-Technology Frontier: Core Research (FW-HTF)

NSF Big Ideas (2016--)

“A unique opportunity to actively shape the development and use of technologies to improve the quality of work while also increasing productivity and economic growth”

- Build human-technology partnership
- Augment human performance
- Illuminate the socio-technological landscape
- Understand and influence risks/benefits of tech/AI on workers and work
- Foster lifelong learning

Work: Physical or mental activity to achieve tangible benefit, e.g. income, project or community welfare.
NSF Future of Work at the Human-Technology Frontier: Core Research (FW-HTF)

Convergent Research
Reflected in project leadership
Must address
• Work Context
• Integrative Research
• Methods, Measures, and Metrics
Possible topics:
• Risks and opportunities for the symbiosis of human/machines
• Social and economic structures
Cross boundaries of science and engineering, strong translational potential

Basics
FW-HTF Research Grants
- Medium up to $1.5M up to 3 yrs.
- Large: $1.5-3M up to 4 yrs.
- Letters of collaboration
- Planning Grants: $150K 1 year.
R&D on Workforce Impacts of AI

- AI technologies offer many potential benefits:
  - creation of new industries and occupations
  - increased opportunities for innovation
  - increased productivity

- However, AI technologies are changing the nature of work, and have caused some concerns:
  - Possibility of lost jobs
  - Mismatch between available occupations and skills of the workforce

- NSF R&D: The Future of Work at the Human-Technology Frontier:
  - Increase understanding of human-technology partnership and emerging socio-technological landscape
  - Create new technologies to augment human performance
  - Foster lifelong and pervasive learning with technology.
New NFF “DARPA light” Program

NSF Convergence Accelerators

• New NSF mechanism for translational and applied research
• Cohort and Active Management model
• Will conduct competitions for major grants on specific tracks through phased competition process
  – Team seeding
  – Intensive workshops for team participants
  – Pitch for large grants to conduct accelerated research
  – Awardees able to compete for additional prizes
• $30 million each for Harnessing the Data Revolution (HDR) and Future of Work at the Human-Technology Frontier (FW-HTF) accelerators
• Potential for smart classroom track under FW-HTF accelerator
• Pilot track competitions expected to start early in FY 2019
  – Team formation process expected to take 6 months ahead of the pitch
Goals for Today

Unpack our expertise in HTF and its potential and risks for the future of work.

Connect research activities to GT future education plans.

Connect FW-HTF to our deep expertise in healthcare.

Reflect on how to catalyze and support convergent research.
The Future of Work at the Human Technology Frontier

Charting the Future of Work at the Human Technology Frontier
Maribeth Gandy Coleman, IMTC

Creating the Next in Education at Georgia Tech
Rich DeMillo, CoC, C21U

Project Briefs on the Future of Work for Health and Humanitarian Services
Jon A. Sanford, CoD, CATEA
Keaton Fletcher, CoS, Psych
Brad Fain, GTRI, CACP

Panel: Convergent Research
Lizanne DeStefano, CEISMC
Kaye Husbands Fealing, IAC, PP
Leigh McCook, GTRI

e-mail: ipat@gatech.edu
Charting the Future of Work at the Human Technology Frontier

Maribeth Gandy Coleman
Principal Research Scientist
Director, IMTC & WCC
Goals

Overview of HTF

Understand and survey current research at GT in context of HTF/FoW

Highlight current convergence research and identify future opportunities
Research at the Human Technology Frontier

“focused on the role of technology to augment human performance, including but not limited to, in the workplace, in the classroom, and to improve health outcomes” NSF CCC Task Force

Developing and studying new technologies that are intimately connected to us and our world (literally and figuratively)

Understanding how machines and humans can operate in harmony?

Anticipating potential impacts on social, economic, and environmental systems

Increasing access and participation

Mitigating risk (automation, inadequate educational pathways, privacy, security threats, algorithmic biases, erosion of human knowledge/skills)
Augmenting the Physical Body

Garbage collection is one of the most hazardous jobs. Workers are subjected to increased muscle and joint injuries because of the laborious nature of the job.

Exoskeleton for Waste Collection Workers

Aaron Young (Exoskeleton and Prosthetic Intelligent Controls Lab, ME)

Sponsor:
Rubicon Global
Functional, Technical and Social Considerations of Wearable Technology

Body Maps

Wearable & Accessible

Sociocultural Design for Wearables

Zeagler, Presti, Lambeth, Gandy, Levy (IMTC)
Baker (CACP)
Imagining Futures: A Collaborative Policy Design for Wearable Computing

Baker (CACP)
Gandy & Zeagler (IMTC)
Enhancing Human Performance via Mixed-Reality

Comparison of Order Picking Methods

Starner, Southern (IC), Scott Gilliland (IMTC)

Partner:
Ubimax GmbH

Worker assisted by: head-up display (HUD), cart-mounted display (CMD), light, and paper pick list
Visual Analytics Supporting Decision Making

Modeling Pediatric Care Flows
Training for the Physical World

Designing AR systems to explore point-of-view, bias, and trans-cultural conflict

AR Training for Highly Infectious Disease Treatment

Improving Safety of Healthcare Workers
Designing for New Work Model and Environments

Technology Use in Work Tasks

Unusual Working Environments

Human-automation Interaction

Walker, Catraombone, Gorman, (Psych)
Increasingly people are turning to gig economy jobs to supplement income.

How can technology support them?

What data can be used to learn about these users to optimize success?

Guidance for the Gig Worker

Matching, Training, Empowering, and Motivating Workers in the Gig Economy

Levy, Lambeth, Gandy Coleman, Zeagler, Byrd (IMTC)
Increasing Participation in Gig Economy

Contingent Employment of People with Disabilities

*Moon (CACP)*

Participation of individuals with disabilities in contingent employment arrangements

Entry into workforce, Opportunities to counter unemployment, flexibility

Potential for lower pay and few benefits, no provisions for workplace accommodations, undermine goals of full employment
Career Support

Game Environments for Assessment & Feedback

Riedl, Edwards (IC), Gandy, Levy, Lambeth, Thompson (IMTC)

Sponsor: ACT Inc.
Just-in-Time Coaching

Job Coaching, Rapid Skills Development, and Worker Acceptance

Wearable systems to help employees rapidly acquire the skills

Just-in-time job coaching for people with disabilities

Passive Tactile Learning

*Milchus (CATEA), Presti (IMTC), Starner (IC)*
Understanding Social, Economic and Policy Factors For Localized Innovation Networks

Applications, Context, and Networks of innovation: Implications for the Future of Work

(Baker, CACP)
Robotics, automation, and artificial intelligence have reduced the number of workers required.

What types of jobs will be most affected?

What new skillsets will be needed for the jobs of tomorrow?

How governments can ease the transition?
Understanding When Advanced User Experience Pays Off

Developing Principles to Guide the Construction of Synthetic Learning Environments using Multimodal Augmented Reality Content
The Future of Work at the Human Technology Frontier

Charting the Future of Work at the Human Technology Frontier
Maribeth Gandy Coleman, IMTC

Creating the Next in Education at Georgia Tech
Rich DeMillo, CoC, C21U

Project Briefs on the Future of Work for Health and Humanitarian Services
Jon A. Sanford, CoD, CATEA
Keaton Fletcher, CoS, Psych
Brad Fain, GTRI, CACP

Panel: Convergent Research
Lizanne DeStefano, CEISMC
Kaye Husbands Fealing, IAC, PP
Leigh McCook, GTRI

email: ipat@gatech.edu
CNE-INSPIRED RESEARCH PROJECTS
AND THE FUTURE OF WORK

RICHARD DEMILLO
EXEC. DIR. C21U AND CNE PROGRAM OFFICE
CHARLOTTE B. AND ROGER C. WARREN CHAIR OF COMPUTING

JANUARY 31 2019
The Georgia Tech Commitment to a Lifetime Education
Prepare students for 2040 when demographics, multiple career paths, churn of knowledge require episodic, agile, intense lifetime investment

The Initiatives
Whole Person Education
New Products and Services
Advising for a New Era
AI and Personalization
Distributed Worldwide Presence

The Culture – Becoming Deliberately Innovative
WHAT IS OUR SENSE OF THE FUTURE?

Buckminster Fuller: Innovation makes current system obsolete

- Most students will be younger than 18 or older than 24
- Degrees/credentials will be smaller fraction of educational products
- Declining market for disciplinary education
- Career paths will be complex, responsive to changing workplaces and markets
- Episodic education not tied to calendars
- Distributed (not stove piped) value chains
- Personalized delivery not massed produced
- Person-to-person (human) experiences ascendant
- Learners need to learn how to succeed when there is a churn of knowledge
- Whole person (non-cognitive) education will be a differentiator
AI DEFINED EDUCATIONAL TECHNOLOGY

- Intelligent tutoring systems
- Predictive models
- Human-centered, scalable, personalized experiences
- Removing accidents of circumstance
- Ethics, agency and responsibility
AI DEFINED EDUCATION WILL BE A HUMAN+MACHINE SYSTEM: WHAT KIND OF SCHOOL WILL TRAIN THE AI’S?

- Humans who teach AI agents to teach humans
  - Train
  - Explain
  - Sustain

- Responsible human+machine ecosystem*
  - Accountable
  - Fair
  - Transparent
  - Honest
  - Human Agency

- Agency
  - Humans have a stake in the outcome
  - Humans have control over inner workings of machines

---

• Authenticated documentation of educational attainment owned by students, not institutions
• Sustainable in a world where students interleave work and learning with many organizations
• Disintermediates accreditors, ranking agents, and others who extract value
• Allows employers to target employees who will succeed
• Creates a true marketplace
- Investigate different kinds of university presence
- Scalable service model that enhances brand
- Satisfies demand for personal interaction
- Bridge cyber-physical gap
- Follow retail models
  - Apple Store
  - Amazon/Good Housekeeping Store
- Renew public university mission
- Develop a new university workforce
• Living Library for Learning™: based on Human Library™
• Curated communities who make themselves available for interactions
• Bringing people together is expensive, complex, and not available on demand
• Principals get to know students by name (and vice-versa)
• Removes case studies and other sources of bias as mediator of interaction
A PERSONAL BOARD OF DIRECTORS

• Success is often a matter of networks rather than achievement
• Create personalized on-tone templates
• Leverage large amounts of data to advise
• User journeys from @censusAmericans
• Networked communities in the style of GeoCities
• Early warning signals from the churn of knowledge
• Tool for “genius bar” advisors in GT atrium
WHOLE PERSON EDUCATION

- The Gatsby Effect
- Moving beyond cognitive skill acquisition
- Examples
  - Statistics as basis for judgement
  - Literature as basis for leadership
  - Great Books curriculum as basis for media literacy
  - Science as a model for ethical engineering
- How do humans acquire non-cognitive skills?
- The science of everyday thinking
ON THE CRITICAL PATH TO THE LIFETIME VISION

Fusing Research and Education
Agile Educational Enterprise
Flexible experiences
Renewal
Guides, Coaches, Sherpas
Campus, learning space, physical places
The Future of Work at the Human Technology Frontier

Charting the Future of Work at the Human Technology Frontier
Maribeth Gandy Coleman, IMTC

Creating the Next in Education at Georgia Tech
Rich DeMillo, CoC, C21U

Project Briefs on the Future of Work for Health and Humanitarian Services
Jon A. Sanford, CoD, CATEA
Keaton Fletcher, CoS, Psych
Brad Fain, GTRI, CACP

Panel: Convergent Research
Lizanne DeStefano, CEISMC
Kaye Husbands Fealing, IAC, PP
Leigh McCook, GTRI

email: ipat@gatech.edu
Technology, Teams, and Healthcare

Keaton A. Fletcher, Ph.D.
Ruth Kanfer, Ph.D.
Work Science Center
Psychology, College of Sciences
Work Science Center

- Science in translation
  - Blogs
  - Podcasts
  - White Papers
  - Speaker Series

[Images of workers and technology, work across the lifespan, and the modern workforce]

Work21.gatech.edu
Work Science Center

• Science in translation
  • Blogs
  • Podcasts
  • White Papers
  • Speaker Series

Workers and Technology

Work Across the Lifespan

The Modern Workforce

Work21.gatech.edu
Introducing Technology to Healthcare

- Da Vinci Case
- Training needs
  - Technical
  - Non-technical
- Job re-design
  - Psychological
  - Social
  - Physical
- Team dynamics
Introducing Technology to Healthcare

- How does introduction of a new technology alter team dynamics?
- How can we introduce a new technology so as to minimize harm to team dynamics?

- Communication
- Coordination
- Cognition
ARTEMIS
AUGMENTED REALITY TESTING OF EQUIPMENT in MULTIPLE IMMERSIVE SIMULATIONS

Dr. Brad Fain
Atlanta, GA
What is ARTEMIS?

• A platform for testing FirstNet enabled innovations
• Easily reconfigured into different tools:
  • Training
  • Scenario Generation
  • Objective Testing for Tools or HUDs
• A tool for studying the future of work for first responders – police, fire fighters, and EMS enabled by FirstNet Technologies
• Capable of being delivered as a Virtual Reality (VR) experience
• Last and not least, an optimized and objective research tool
What is ARTEMIS?

ARTEMIS FRAMEWORK

- Scenario Management
- Data Collection
- Post Scenario/Debriefing
- Scenario Playback
- Modding Tools
- Analytics
- Data Visualization
- Real-Time Annotations
- Scenario Creation
- External Mods
Future of Work for First Responders

- **Just in time training**
  - EMT receives life saving instructions on a specific procedure
  - Police officer briefed on management of someone with a suspected cognitive impairment one the way to the emergency

- **Human – Drone – AI collaboration**
  - AI monitors social media channels to identify relevant contextual information
  - Drone gathers data from a different perspective to enable police response

- **Ad hoc deeply integrated team networks (distributed response management)**
  - Police, fire, and EMS respond from multiple municipalities and an ad hoc network of response teams form to coordinate emergency management
THANK YOU!

Dr. Brad Fain
brad.fain@gtri.gatech.edu

Disclaimer: All trademarks, service marks, logos and pictures used in this presentation belong to their respective owners. Images and text owned by other copyright holders are used here under the guidelines of the Fair Use provisions of United States Copyright Law.
The Future of Work at the Human Technology Frontier

Charting the Future of Work at the Human Technology Frontier
Maribeth Gandy Coleman, IMTC

Creating the Next in Education at Georgia Tech
Rich DeMillo, CoC, C21U

Project Briefs on the Future of Work for Health and Humanitarian Services
Jon A. Sanford, CoD, CATEA
Keaton Fletcher, CoS, Psych
Brad Fain, GTRI, CACP

Panel: Convergent Research
Lizanne DeStefano, CEISMC
Kaye Husbands Fealing, IAC, PP
Leigh McCook, GTRI

email: ipat@gatech.edu
HUMAN-TECHNOLOGY FRONTIERS & THE FUTURE OF WORK

2019 IPaT Spring Town Hall
Panel on Convergent Research

Kaye Husbands Fealing
Diversity, Equity & Inclusion Considerations
Georgia Tech School of Public Policy
January 31, 2019
Areas of Expertise in SPP

1. **Science, Technology & Innovation Policy**
   Innovation Ecosystem & Public Policy; TextMining & **Data Analytics**; Intellectual Property

2. **Energy, Climate & Environmental Policy**
   Energy Policy; Environmental Policy; Sustainability

3. **Information & Communications Technology Policy**
   Cybersecurity Policy; Internet policy; Technology & Disabilities

4. **Organization Design, Stem Education, Careers & Workforce**
   S&E Careers & STEM Education; Broadening Participation & Performance in STEM; Politics of Organizations; **Organization of Science & Technology**

5. **Ethics & Philosophy of Science & Technology**
   Engineering Ethics; Environmental Ethics; Biomedical Ethics; **AI & Ethics**

6. **Economic Development & Social Policy**
   Regional Innovation; **Smart Cities**; Health Policy & Management

7. **Program Evaluation, Public Management & Administration**

8. **Policy Process, Leadership, & Pre-law**

Kaye Husbands Fealing
Georgia Tech School of Public Policy, January 31, 2019
• Who is producing knowledge?
• Who gets to decide what knowledge is produced?
• Who wins, who loses?
• Research agenda:
  • Organizations
  • Populations
  • Geography
  • Processes/Networks
  • Recruitment
  • Communication

Danger of reproducing existing inequalities

• Need to assess the future of our own work (research and curriculum)
  • Conceptual gaps
  • Methodological gaps
  • Tools gaps
  • Data gaps

• In addition to organizational structures, consider
  • Incentive structures
  • Power structures
  • Ethical structures
  • Technological structures

Consider inclusive innovation
Do we run the risk of reinforcing existing biases or even introducing new types of bias in the age of AI?
The Future of Work at the Human Technology Frontier

Charting the Future of Work at the Human Technology Frontier
Maribeth Gandy Coleman, IMTC

Creating the Next in Education at Georgia Tech
Rich DeMillo, CoC, C21U

Project Briefs on the Future of Work for Health and Humanitarian Services
Jon A. Sanford, CoD, CATEA
Keaton Fletcher, CoS, Psych
Brad Fain, GTRI, CACP

Panel: Convergent Research
Lizanne DeStefano, CEISMC
Kaye Husbands Fealing, IAC, PP
Leigh McCook, GTRI

email: ipat@gatech.edu
IPaT Star Award
Congrats and Thank You to the PHDI Team

Matt Noury
Paul Diederrich
Richard Starr
Megan Denham
Shawn Imtiazuddin
Wesley Stewart
Oscar Perez
Shawn Guffey
Matt Sanders

PHDI now certified to meet HITRUST CSF v9.1

The Protected Health Data Infrastructure (PHDI) houses projects and datasets from any campus unit with PHI/PII compliance needs including HIPAA, HITECH, CMS and Sponsor specific

PHDI is a OneGT operating model with support from the EVPR/IPaT, GTRI-ICL, OIT Cybersecurity and Network Services, GTRI Information Systems and Research Security, and other unit and lab IT professionals and researchers.
IPaT Star Award

Congratulations to the Click Safe Team! (a project funded by the Department of Family and Children Services):

Nick Mulkey
Brian Davidson
Thomas Lester
Jeremy Johnson

Winston Messer
Evan Stuart
Trevor Goodyear
IPaT Star Award

Clock Safe

A new emergency response app to aid case managers in exiting threatening and dangerous site situations.

- Quick and discreet.
- Activated within moments.
- Press and hold five seconds or press five consecutive clicks.
- Alerts both manager and emergency contact center.
- Pinpoints case manager location for safe removal.

Launches December 2018 in select Georgia counties.
IPaT Star Award

Click Safe
A System Designed with Your Safety in Mind
Thank You

Reception and Networking