

IRIM Strategic Planning Report: Building the Future of Robotics at Georgia Tech

July 2025

Facilitated by  Strategic Consulting





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Project Overview

Purpose

- The Vice President for Interdisciplinary Research engaged Georgia Tech Strategic Consulting (GTSC) to **provide a clear understanding and shared vision for success for the Institute for Robotics & Intelligent Machines (IRIM) into the future.**
- This follows the Office of Interdisciplinary Research's recent comprehensive assessment of each IRI's activities over the previous five years and the impact those activities had, highlighting the educational program which is outside of the purview and funding streams of the VPIR.
- The VPIR has asked GTSC to partner with IRIM leadership to engage in strategic discussions to provide the necessary data, perspectives, and community input for the VPIR to determine IRIM's next phase.

Approach and Methodology

- GTSC engaged in faculty roundtables, town halls, individual ad hoc conversations, and leadership exploration conversations with the IRIM team, current and potential partners
- GTSC led a town hall to gather and validate the perspectives and feedback from the IRIM community to help influence the strategic development process
- GTSC reviewed data, white papers, articles, reports and other materials provided by IRIM, partners, and associations and research organizations

Strategy Team

Project Team



Michelle Powell



Tanika Kyle



**Kendra
Lewis-Strickland**



Greg Sawicki



Julie Kozyreva



Christa Ernst



Cynthia Jordan

Project Advisors



Nader Sadegh



Gary McMurray



Community Voice

These insights reflect the IRIM community's strengths and opportunities, gathered through interviews, Town Halls, and roundtables. They highlight a shared ambition to increase impact and align with future goals. A comparative analysis of potential models informed our final recommendation.

Unit Strengths

The following list highlights the strengths of the IRIM community. The themes were expressed by various participants during the Data Collection phase.

Technical interdisciplinary research rooted in computing and engineering for problem-solving

Seed grants support collaboration across different areas

Strong international recognition and presence at top conferences and in scholarly activities

Research has societal and transformative impacts

Access to unique labs and resources, advanced platforms, and computing resources

High-achieving and engaged student community

Most faculty are approachable, collaborative, and committed

Coordinated community engagement opportunities are received and desired to engage faculty, students, and industry

Opportunities for Improvement

The following list highlights the opportunities of the IRIM community. The themes were expressed by various participants during the Data Collection phase.

Develop a unifying roadmap, objectives, and vision

Expand and strengthen collaboration between STEM and non-STEM fields, targeting ethics, arts, and policy

Effectively centralize, shared spaces and platforms

Build and deepen strategic industry partnerships for collaboration, co-development, and workforce development

Strengthen partnership with legal and commercialization pathways to accelerate innovation

Continue to invest in research capacity to lead in conducting societally impactful

Enhance internal and external messaging to amplify, attract and build with talent and stakeholders

Develop opportunities for messaging and engagement for junior faculty involvement

Collective Aspiration Vision

The following components are shaped by shared opportunities, reflecting the community's collective ambition to elevate impact and align with future possibilities



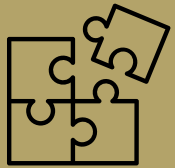
Enhance Holistic Research Support

- Prioritize support staffing, seed funding, and core facilities to support high-impact research and growth opportunities.
- Address gaps in dataset availability, storage capacity, and computing resources.
- Act on community concerns to create a more efficient and supportive research environment.



Foster a Collaborative Community

- Organize regular structured and unstructured events that spark idea exchange and relationship-building across teams and partners.
- Utilize existing infrastructure more strategically for collaboration and engagement within and beyond robotics



Broaden Interdisciplinary Collaborations

- Unite STEM and non-STEM fields to tackle complex societal challenges with shared goals and diverse expertise.
- Focus research on bold issues like organic robotics, medical, space, and manufacturing
- Embed ethics, safety, and policy into research from the start to build though leadership opportunities



Reinforce Entrepreneurship and Commercialization

- Engage with startups, understand the innovation landscape, and streamline IP processes to turn research into market-ready solutions.
- Build intentional partnership with commercialization to educate and inform the robotics community of available resources

Collective Aspiration Vision

The following components are shaped by shared opportunities, reflecting the community's collective ambition to elevate impact and align with future possibilities



Strengthen External Partnerships

- Strengthen Industry-University partnerships to drive innovation and apply research to real-world challenges
- Build meaningful relationships with community, industry, and government partners to amplify impact and secure funding
- Create efficient, sustainable operations of shared research infrastructure



Expand Opportunities and Incentives

- Increase access to internships, fellowships, and professional development for students and faculty to drive growth, innovation, and engagement in cutting-edge research
- Incentivize junior faculty through targeted career development opportunities and recognition to strengthen retention and leadership pipelines
- Align funding requests and project development with long-term goals to maximize impact and resource efficiency



Showcase Impact and Innovation

- Further highlight robotics' role in enhancing human capabilities and solving grand societal challenges to attract top talent, strategic partnerships, and sustained funding
- Increase awareness of related events and initiatives across campus to identify synergies and co-develop solutions to complex challenges

Strategic Options for Robotics: Principles and Key Impact Areas

Informed by community input, we conducted a comparative analysis of potential models for IRIM to inform decision-making and align its future with institutional priorities.

For each option we will analyze the impacts on:

- **Strategic Alignment:**
Aligns with Georgia Tech's strategic goals by advancing research, education, commercialization, and interdisciplinary collaboration
- **Collaborative Ecosystem & Strategic Engagement:**
Builds cross-campus and external partnerships by connecting disciplines, industry, and government, while supporting mentorship, infrastructure, and research growth
- **Convening Power & Student Engagement:**
Brings together faculty, students, and partners from diverse disciplines to enhance research, industry collaboration, and real-world student experiences
- **Integrated Innovation & Growth Potential:**
Drives cross-disciplinary innovation, scales new initiatives, and positions GT to lead in emerging technologies and societal impact

Circle Fill	Meaning
●●● (Full)	High Alignment – Strong support and strategic relevance
●●○ (2/3)	Moderate Alignment – Partial support with some limitations or narrower scope
●○○ (1/3)	Low Alignment – Minimal support or limited strategic relevance
○○○ (Empty)	No Alignment – Does not have support and strategic relevance

Strategic Options for Robotics: Future State Options for Consideration

Informed by community input, we conducted a comparative analysis of three potential IRIM models to guide decision-making and align with institutional priorities.

Impacts	Recommended Option		
	Option 1: Strategic Realignment of IRIM	Option 2: Become a Research Center in a School	Option 3: Decentralize Robotics
ISP and IRI Strategic Alignment	● ● ●	● ● ○	○ ○ ○
Collaborative Environment & Strategic Engagement	● ● ●	● ● ○	○ ○ ○
Broad Convening & Student Engagement	● ● ●	● ○ ○	○ ○ ○
Innovation Ecosystem & Growth Potential	● ● ●	● ○ ○	○ ○ ○

Final Recommendation: Strategic Realignment of IRIM







Option 1: Strategic Realignment of IRIM

- Highest alignment with Georgia Tech's strategic goals
- Maximizes interdisciplinary collaboration and innovation potential
- Strengthens convening power and student engagement
- Supports scalable infrastructure and sustainable growth



Why This Option?

-  Reflects broad support and shared aspirations from faculty, students, and partners
-  Aligns with institutional priorities in research, education, and commercialization
-  Positions IRIM to lead in emerging technologies and societal impact
-  Leverages existing infrastructure while enhancing collaboration and visibility

Next Section: Community-informed actions for a shared vision for IRIM's future state.



Future State Realignment

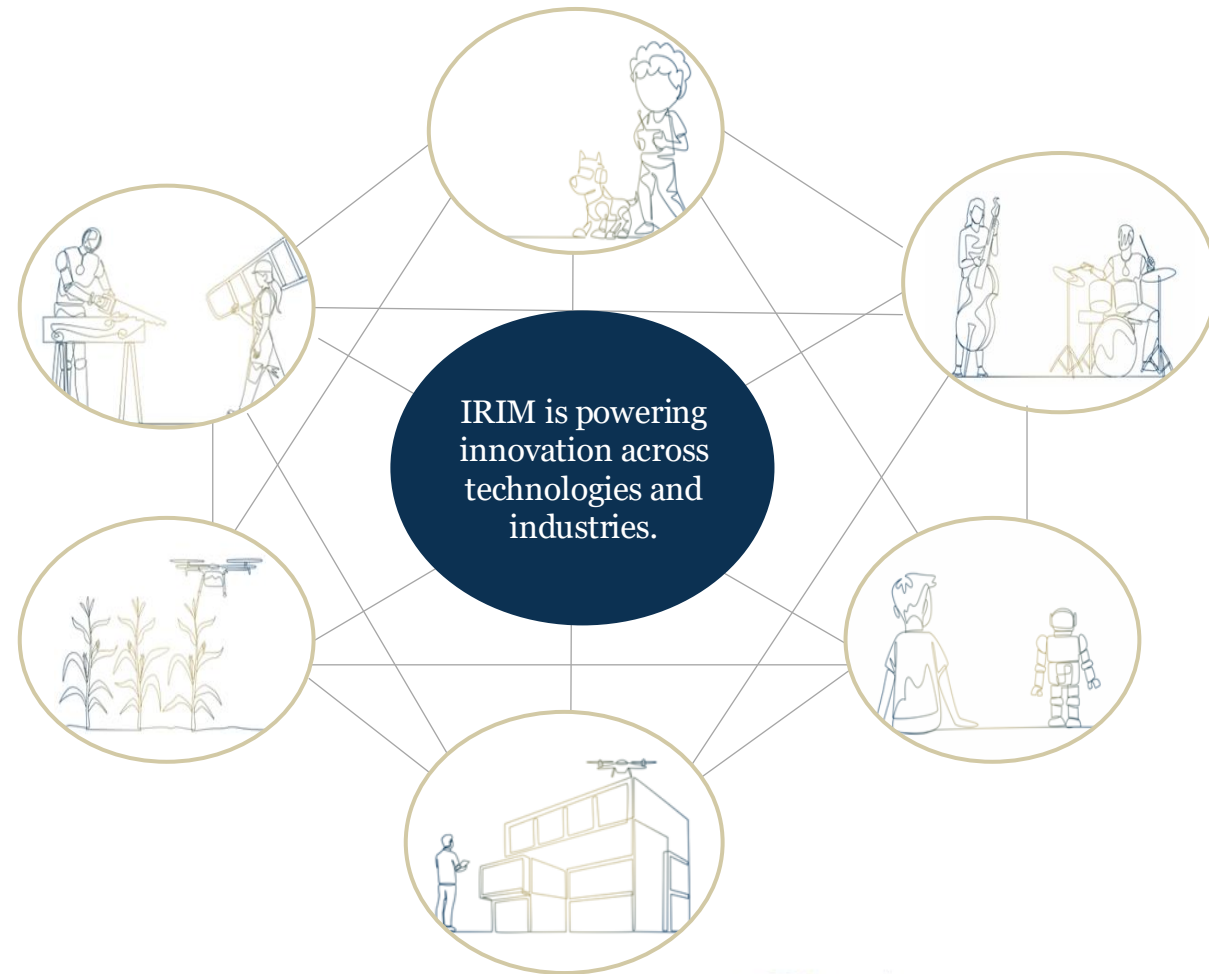
Insights informed by comprehensive community input and diverse data sources, outline strategic pathways for growth and innovation.

Strategic Value | Robotics is Ubiquitous

With the prevalence of robotics in our daily lives and as a flagship Institution around technology that improves the human condition, Robotics is essential to Georgia Tech's leadership in technical innovation, application through industrial partnerships, and societal impact.

As the global robotics market accelerates, Georgia Tech should expand its footprint via IRIM and its application and industry areas. Strategic integration across disciplines, a magnet for top-tier talent, and a hub for real-world impact—robotics and intelligent machines is the key to future-proofing the Institute and securing our place at the forefront of societal transformation.

Live | Work | Play



Mission Statement

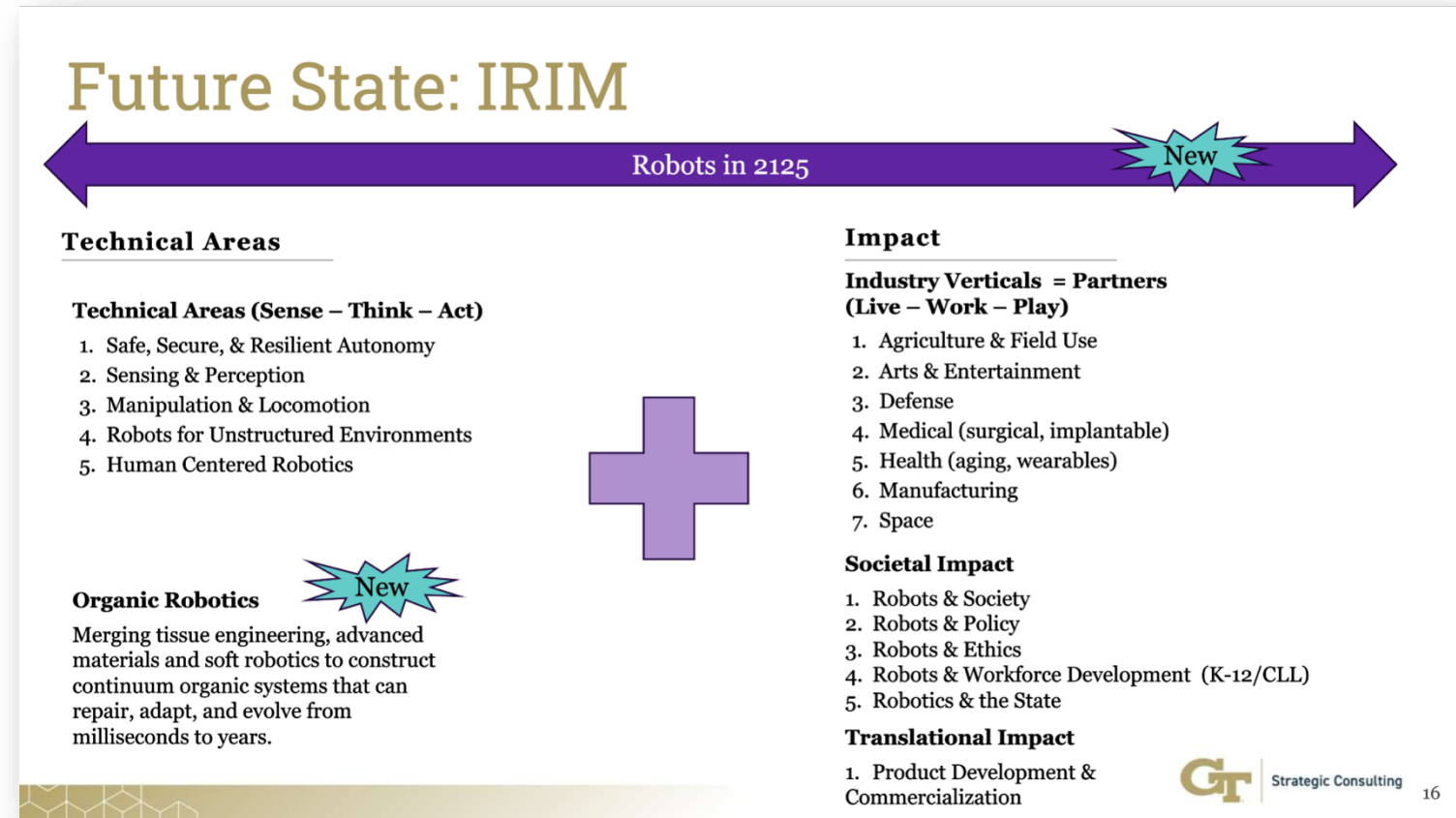
Our mission is to ignite collaborations across the Georgia Tech campus, our local communities and around the world to realize robotic systems that enhance human capability to sense, think and act in order to improve how people live, work and play across their lifespan.

**This mission was generated from community input via Town Halls and surveys in Spring 2025*

IRIM'S Future

To leverage the broad opportunities for Georgia Tech & IRIM, the future state recommendations include:

1. Highlighting through public engagement the Human-Robot Society in 2125 initiative. It is both an opportunity for thought leadership along with public engagement in science and technology.
2. Broadening participation across and within technical areas;
3. Focusing on a new technical area (organic robotics) and
4. Creating nexuses by industry verticals while supporting IRI goals broadly.



Value Creation

Interdisciplinary Innovation Hub – Robotics & Intelligent Machines

Research Connections & Contributions

Robotics Core Facilities

Industry Engagement

Student ‘Hands-On’ Experiences

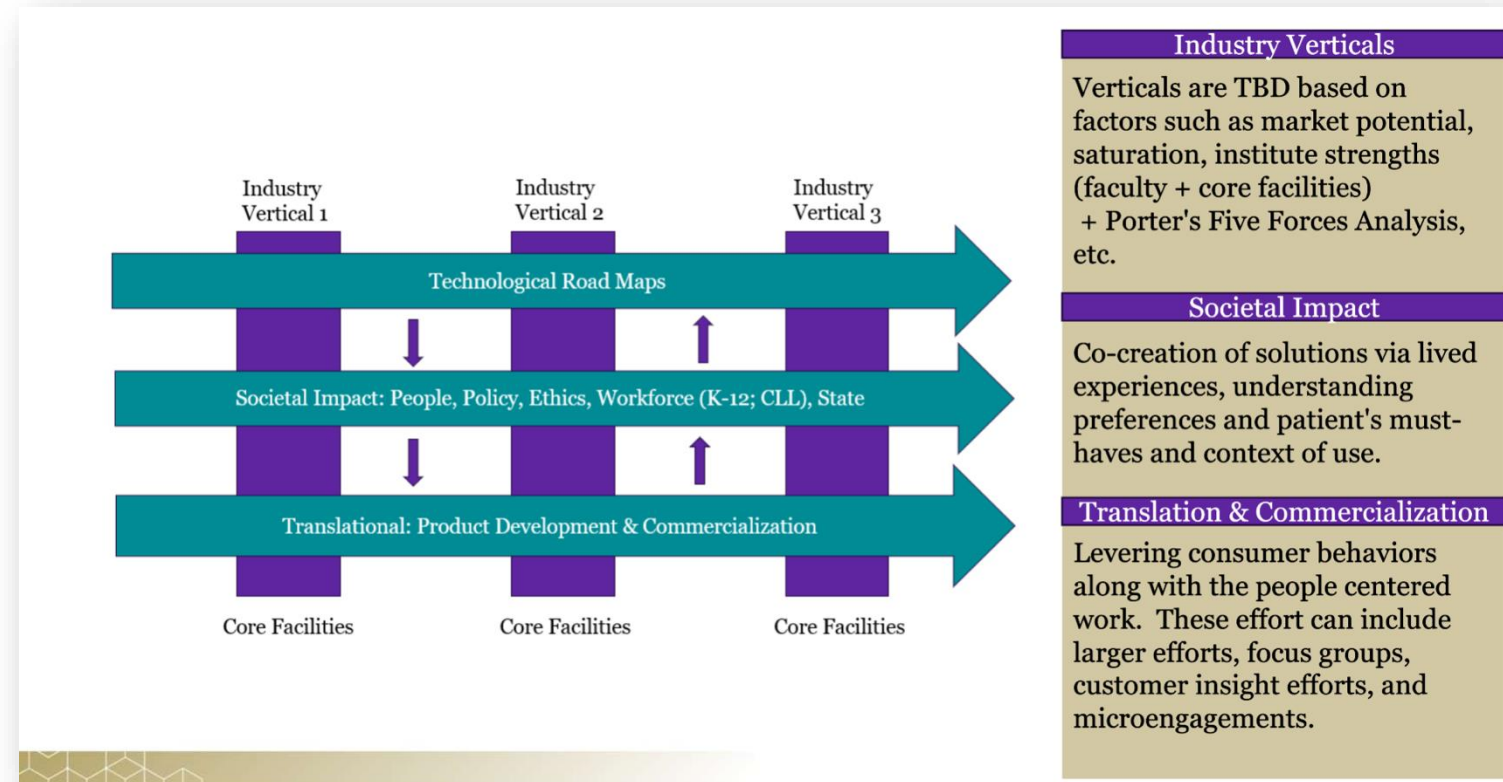
Commercialization & Translational Support

Community Engagement

IRIM's Impact Potential

With market growth happening in multiple robotics areas it is recommended to develop technology roadmaps to support the innovations that have potential commercialization and societal engagement opportunities. These areas a systems approach addressing important technological aspects including but not limited to data and energy consumption.

The industry verticals will be important to support our **Big Bet aspirations** for the medical innovation hub and commercialization efforts.



This type of effort leverages the expectations of the IRIs (technology + societal impact + translation/commercialization) but in a portfolio approach by industry vertical. It will require immense coordination between IRIs, Colleges, Units, Businesses, Governments, & Society.

Project Stakeholder Engagement

IRIM leadership and project team members met with STEM and non-STEM stakeholders in the Spring of 2025 to collect feedback and insights for broadening campus engagement. Follow up meetings and conversations and engagements are needed. Formalizing a stakeholder engagement plan will be necessary to address the community’s engagement needs.

Sample of Stakeholder Meetings	
Karl Lang (EAS)	Bruce Walker (Psychology)
Francis Rivera-Hernandez (EAS)	Ward Broom (RoboGA)
Gil Weinberg (Music)	Leanne West (EVPR)
Lisa Marks (ID)	EunSook Kwon (ID, Chair)
Devin Desai (Scheller)	Javier Irizarry (Bldg Con)
Jason Freeman (Arts at Tech)	Tom Conte (CoC, ADR)
Aaron Levine (IAC, ADR)	Steven Sprigle (Shepherd Center)

Sample Follow-Up Actions
<p>Cross Campus Research Engagement</p> <ul style="list-style-type: none"> • Faculty Meeting Presentations (Industrial Design) • Seed Funding Discussion (School of Music) • Wireless Networks Research Center (ECE) • Measuring IRI Impact (BB 3.5) <p>Beyond Campus: Connections</p> <ul style="list-style-type: none"> • Student Experiential Learning & Recruiting (Internship Program with Industry Partners) • Create-X (Startups) • Quadrant-i (Translation of Technology) • RoboGA • Seed Funding Discussion (Non-Profit Healthcare Organizations)

Operational Recommendations

#	Recommendation
1.	<p>Financial Goal: Develop a diversified financial goal plan that includes donors, venture capitalists, industry partners and federal agencies and state funding.</p> <ul style="list-style-type: none">• IRIM leadership needs to discuss opportunities to find alternative revenue sources for program needs for space/building aspirations and programming ideas. (Ex. – industry sponsored neighborhoods)• Explore ways to partner across the Institute for increasing cross-campus engagement/seed funding (i.e., Arts at Tech Catalyst Grants + IRIM).• IRIM should partner with Office of Corporate Engagement to update and enhance the Industry Affiliate program. Look at benchmarks (i.e., Stanford’s Founding Memberships) to enhance offerings.
2.	<p>External Communities: Develop a plan to engage community members, federal/state/local governments and alumni.</p> <ul style="list-style-type: none">• Delphi Panel can be leveraged to have a broader engagement with all external communities in a powerful way.<ul style="list-style-type: none">• Potential partnership with GPB or other media to broadly share this effort.
3.	<p>Internal Communities: Develop a comprehensive plan to address multiple stakeholders and campus-wide engagement opportunities (students, faculty, staff, Schools, Colleges, Library, IRIM community, new faculty).</p> <ul style="list-style-type: none">• Look for mutual opportunities for events• Focus on underrepresented Colleges• Leverage momentum from Spring 2025 conversations (i.e., Industrial Design, Music, EAS, Scheller and IAC conversations)
4.	<p>Engagement Plan Responsibility: Empower IRIM’s Asst Director of Business Operations to ensure that plans are developed and executed on. Multiple leaders within the IRIM community will be needed to engage for these efforts to be successful.</p>
5.	<p>Engagement with Leaders: IRIM Leadership should continue to connect with Big Bets PM and leaders for collaboration in the Medical Innovation, Think Tank, etc. Also, connecting with the Institute Relations and Economic Development is vital.</p>

Stakeholder Engagement Plan

One of the first things IRIM leadership needs to do is complete the stakeholder engagement plan. This includes following up on meetings, conversations, and engagements that took place in the Spring 2025 as well as looking at additional opportunities and needs. A stakeholder engagement tool was provided to IRIM.

1

Define

Define opportunities (Early Career Stakeholder Engagement; Cross Campus Engagements; Student Engagements; Industry Engagement; Community Engagement; Overall IRIM Community; Government (Federal, State, Local), Community Members, Donors, Alumni). Determine types of engagement and information needed for engagements.

2

Prioritize

Determine prioritizing in alignment with IRIM's goals. Engage other leaders and initiative leads in this effort.

3

Engage

Execute on the plan. Schedule at the beginning of the semester but across the semester. Continue to build spaces for open dialogue to provide feedback and experiences.

4

Track

Utilize the stakeholder tool to track activities for a shared understanding of what is being accomplished. Recommend reviewing insights at future standing meetings.

Roadmap

FY26

Envisioning a Broader Future

- Confirm Executive Sponsorship agreement with strategic recommendations for IRIM
- Continue with implementation beginning of campus-wide outreach and overall stakeholder engagement plan (*engagement tracking tool provided) following with recommendations on responsibility of engagement and ownership of the overall plan and tracking. Start with follow up meetings identified in Spring efforts both for broadening the community and supporting the early career faculty within IRIM.
- Begin planning efforts with Development. Create a full-cycle plan to address the aspirations of the IRIM community.
- Engage EVPR's office on existing space opportunities & co-location of specific lab (research neighborhoods).
- Considering the breadth of industry engagement an FTE is critical and tied to sustained interaction with the Office of Corporate Engagement and the Office of Commercialization (and Quadrant-i).
- Scaling of the aspirations will need to be addressed and should be reviewed annually. Additional staff may be needed to grow.
- Continue to address the insights around the Voice of the Employee.

With the current federal environment in a state of flux, coupled with the unique industry position in front of us, we are recommending a focused attention on FY26 with openness to discussions for FY27 and beyond once organizational decisions are made and the federal landscape is better understood.

Next Steps



1 >

**Confirm recommendation
with Executive Sponsor**



2 >

**Share recommendation with
IRIM leadership, team, leads and
community.**



3 >

**Execute on recommendations
& roadmaps**



Appendix



State of Robotics at Georgia Tech

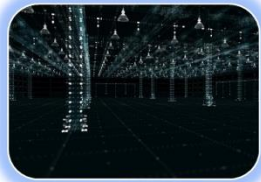
Robotics @ GaTech | Current--> Future State

'Full-stack' hardware + software
'tech gurus'

Prolific scholarly impact

Internationally recognized
robotics 'rock-stars'

SENSE -->

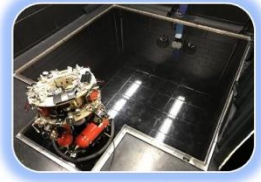


Sensing & Perception



Robots for Unstructured Environments

THINK -->



Safe, Secure, & Resilient Autonomy



Manufacturing and Logistics

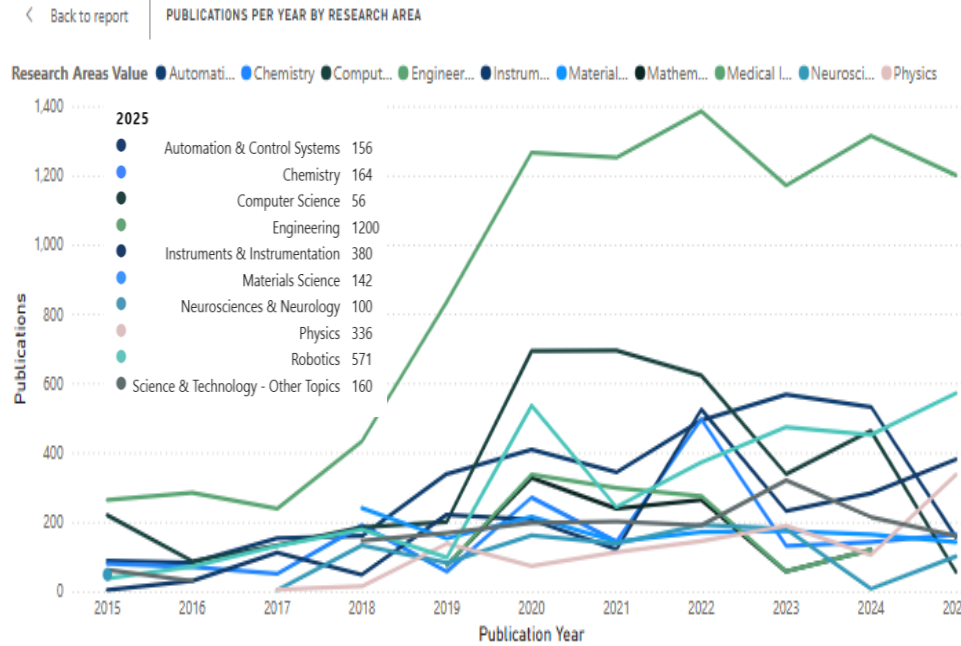
ACT -->



Manipulation & Locomotion



Human-Centered Robotics



ICRA'25

Georgia Tech

Pick Tech Author

- 57 Papers
- 136 Tech Experts
- 129 Partners
- 54 Partner Orgs

PAPERS by Tech Unit

- ENGINEERING: 271 papers
- COMPUTER: 18 papers
- SCIENCE: 5 papers
- OTHER: 1 paper

BEST PAPER FINALIST

Individual and Collective Behaviors in Soft Robot Worms Inspired by Living Worm Blobs

Authors: CK, JK, EC, HT, RW, SB, JW

Harry Tuzson (PhD BSE 2024), Saad Bhamia (Assoc Prof, ChBE)

SESSIONS

Sorted by number of teams in session, then alphabetically.

SESSIONS	CONTRIBUTORS
Bioinspiration and Biomechanics	1
Initiation Learning for Manipulation	3
Legged Locomotion: Novel Platforms	6
Multi-Robot Systems	10
Agricultural Automation	13
Mechanism Design and Control	15
Reinforcement Learning	17
Representation Learning	19
Resiliency and Security	20
Vision-Based Navigation	23
Aerial Robots: Mechanics and Control	25
Assistive Robotics	26
Bio-Inspired Robot Learning	27
Design and Control	28
Diffusion for Manipulation	29
Diffusion Models	30
Explainable AI in Robotics	31
ID and Estimation for Legged Robots	32
Initiation Learning	33
In-Hand Manipulation	34
Integrating Motion Planning/Learning	35
Learning for Manipulation	36
Manipulation Planning and Control	37
Marine Robotics	38
Medical Robot Systems	39
Model Control, Legged Robots	40
Motion Planning	41
Multi-Robot Exploration	42
Multi-Robot Swarms	43
Novel Methods for Mapping/Localization	44
Offroad Navigation	45
Optimization and Optimal Control	46
Perception for Mobile Robots	47
Reinforcement Learning Applications	48
Robot Safety	49
SLAM	50
Soft Robotic Grasping	51
Software Tools	52
Surgical Robotics: Planning	53
Surgical Robotics: Catheters/Needles	54
Task and Motion Planning	55
Teleoperation	56
Testing and Validation	57

...but 'silo-ed'

...stuck in 'INTRA-disciplinary academic robotics niches

need to incentivize and support:

...intentional 'integration' via on-site collaborations

... truly INTER-disciplinary interactions

...to make translational and societal impact

IRIM Initiatives Program



Research

[About](#) | [Our Research](#) | [News and Events](#) | [Resources](#)

[Home](#) > [Institute for Robotics and Intelligent Machines Announces New Initiative Leads](#)

Institute for Robotics and Intelligent Machines Announces New Initiative Leads

Matthew Gombolay; Assistant Professor, Interactive Computing | Human-Robot Society in 2125: IRIM Leading the Way

Ye Zhao; Assistant Professor, School of Mechanical Engineering | Safe, Scalable, and Sustainable Human-Robot Teaming: Interaction, Synergy, and Augmentation

Stephen Balakirsky; Regents' Researcher, Georgia Tech Research Institute & Panagiotis Tsiotras; David & Andrew Lewis Endowed Chair, Daniel Guggenheim School of Aerospace Engineering | Proximity Operations for Autonomous Servicing

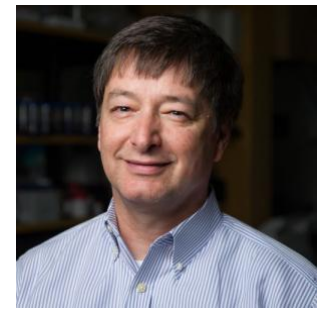
Gregory Sawicki; Joseph Anderer Faculty Fellow, School of Mechanical Engineering & Aaron Young; Associate Professor, Mechanical Engineering | Wearable Robotic Augmentation for Human Resilience

Colin Usher; Robotics Systems and Technology Branch Head, GTRI | Opportunities for Agricultural Robotics and New Collaborations

Panagiotis Tsiotras; David & Andrew Lewis Endowed Chair, Daniel Guggenheim School of Aerospace Engineering & Sam Coogan; Demetrius T. Paris Junior Professor, School of Electrical and Computer Engineering | Initiative on Reliable, Safe, and Secure Autonomous Robotics



**Greg
Sawicki**



**Gary
McMurray**





“BIG IDEAS” = FUTURE AMBITIONS

Creating robots to help us ---> Sense. Think. & Act.
---> to Live. Work. & Play. across the lifespan.

IRIM Partnering with: IBB IDEaS SEI GTMI IMS INNS IPaT IRB ISS SRI
GTRI

1. Robots in Society - 2125

Curating ‘think tank’ style report on opinions from ‘thought leaders’ in technology, policy, ethics, infrastructure, business and law imagining the 100 year impact of robots on society

IPaT ISS SRI IDEaS
GTMI SEI GTRI
INNS

2. Organic Robotics

Merging tissue engineering, advanced materials and soft robotics to construct continuum organic systems that can repair, adapt, and evolve from milliseconds to years.

IBB IMS SRI
IRB

3. NeuroRobotics enabled Human-Robot Symbiosis

Synthesizing neuroscience, machine-learning, wearable sensing and VR/AR to mediate and shape the interface between physical and digital worlds.

INNS IMS IPaT
IDEaS

4. #RoboZoo #RoboBiome

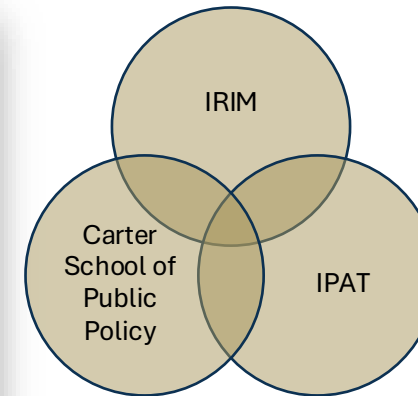
A centrally-located collaborative showcasing ‘research neighborhoods’ where the robotics community can interact + ideate with robots that *live. work. + play.*

GTMI IPaT
GTRI SRI

A Foundational Initiative | Robots in Society: 2125

Curating ‘think tank’ style report on opinions from ‘thought leaders’ in technology, policy, ethics, infrastructure, business and law imagining the 100 year impact of robots on society.

- Ties to BB 3.4 Strategic Studies/Think Tank
- Ties to BB 3.5 Research Impact



Towards Interdisciplinary ‘Thought Leadership’

With support from IRIM and IPaT and in collaboration with the Carter School of Public Policy **Matthew Gombolay** (CoC-IC) is convening a Delphi Panel to help imagine the future impacts of Robots in society.



Matthew Gombolay

Robots in 2125 – Help Shape the Future



Matthew Gombolay

38 subscribers

Subscribe

3 3 Share Save ...

137 views Jun 18, 2025 #2125 #FutureOfAI #RobotsInSociety

What kind of world do you want robots to help build? This cinematic short is more than a vision of 2125 – it’s a call to action. From climate repair and brain cancer treatment to inclusive sports and planetary colonization, this video imagines a future where embodied AI supports how we live, work, and play. Every scene was inspired by real possibilities – and we need your voice to help shape what comes next.

This Fall, the Institute for Robotics and Intelligent Machines (IRIM) will launch a new Delphi Panel – a diverse group of experts, artists, policymakers, engineers, and advocates – to answer one shared question: “How should embodied AI transform society in the next 100 years?”

If you want to contribute – we want you involved. Apply to be part of the IRIM Delphi Panel: <https://forms.office.com/r/Wnniux4Vfx>

#DelphiPanel #RobotsInSociety #IRIM #FutureOfAI #EmbodiedIntelligence #CinematicRobotics #HumanCenteredTech #ParticipatoryFutures #2125



Strategic Consulting

Positioning GT for the Future | Organic Robotics

Merging tissue engineering, advanced materials and soft robotics to construct continuum organic systems that can repair, adapt, and evolve from milliseconds to years.



Hong Yeo



The Wearable Intelligent Systems and Healthcare Center (WISH Center) brings together Georgia Tech's expertise in electronics, materials, systems, data, and medical science. WISH creates opportunities to develop cutting-edge bioelectronics and human-machine interface technologies.



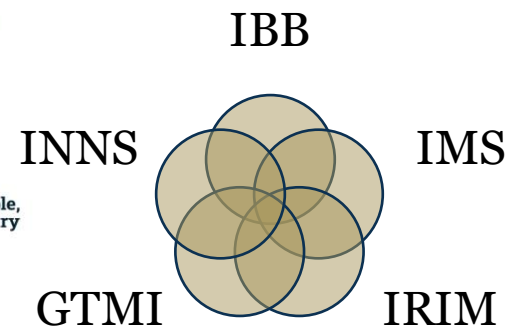
Johnna Temenoff

Working together to advance cell manufacturing



Transforming the manufacture of cell-based therapeutics into a large-scale, lower-cost, reproducible, and high-quality engineered process, for broad industry and clinical use.

A partnership with the National Cell Manufacturing Consortium



- Ties to BB 4.2 Medical Innovation Hub.

Towards Interdisciplinary 'Thought Leadership'

- Provides a unique opportunity for Georgia Tech to leverage existing strengths and build upon them in a highly interdisciplinary and future forward research area.
- Recommend discussion to embed this opportunity into the Medical Innovation Hub portfolio.
- Attention should be given to potential cluster hire needs.



Home Research Programs HyBRIDS: Hybridizing Biology and Robotics Through Integration For Deployable Systems

HyBRIDS: Hybridizing Biology and Robotics through Integration for Deployable Systems

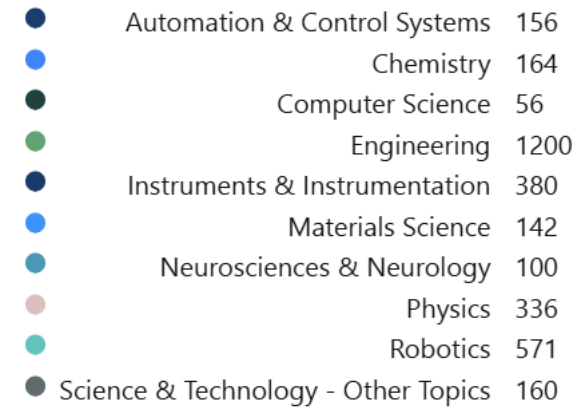


According to the Fuentek report, soft robotics is revolutionizing the industry by introducing flexible, adaptable robots made from soft materials that mimic biological systems. This innovation enhances safety and efficiency across various sectors, allowing robots to interact safely with humans and navigate complex environments. For instance, in **healthcare**, soft robots assist in **rehabilitation** and perform **minimally invasive surgeries**, significantly reducing patient risk.

State of GT Robotics | Publications & Research Area

The IRIM community are prolific in publications and impact of their publications (citations). Beyond Engineering, Robotics is the most prolific area of research within the IRIM community - and trending upward along with Instrumentation. Computer Science and Automation & Control Systems are trending downward. This pattern likely indicates a re-emergence of robot sensing and actuation (hardware) as a key growth area (vs. software).

2025

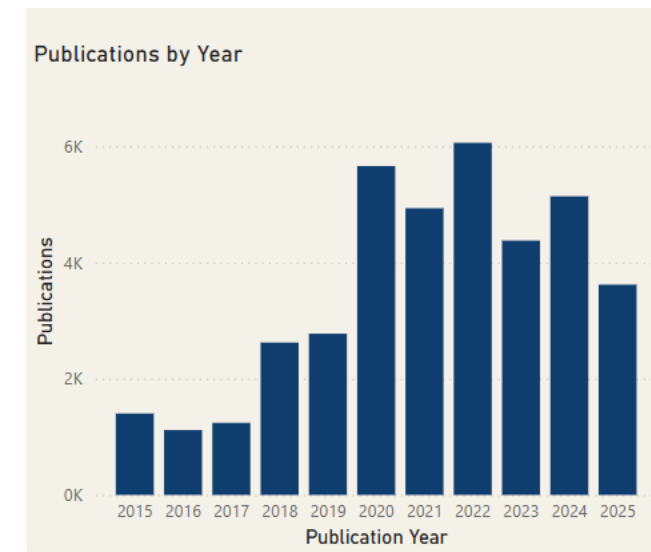
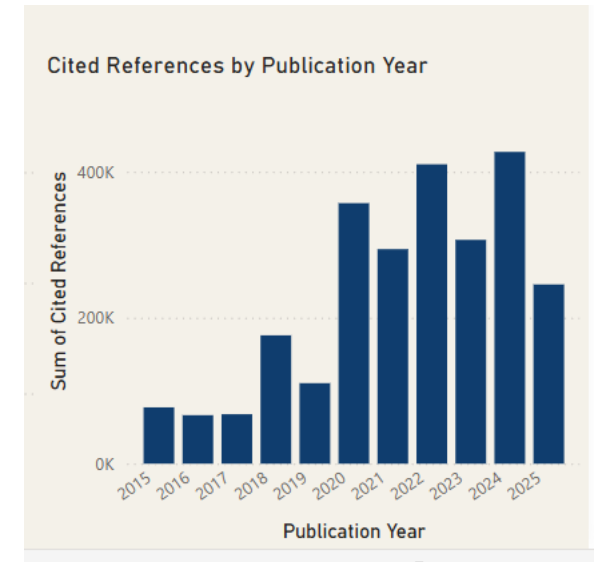
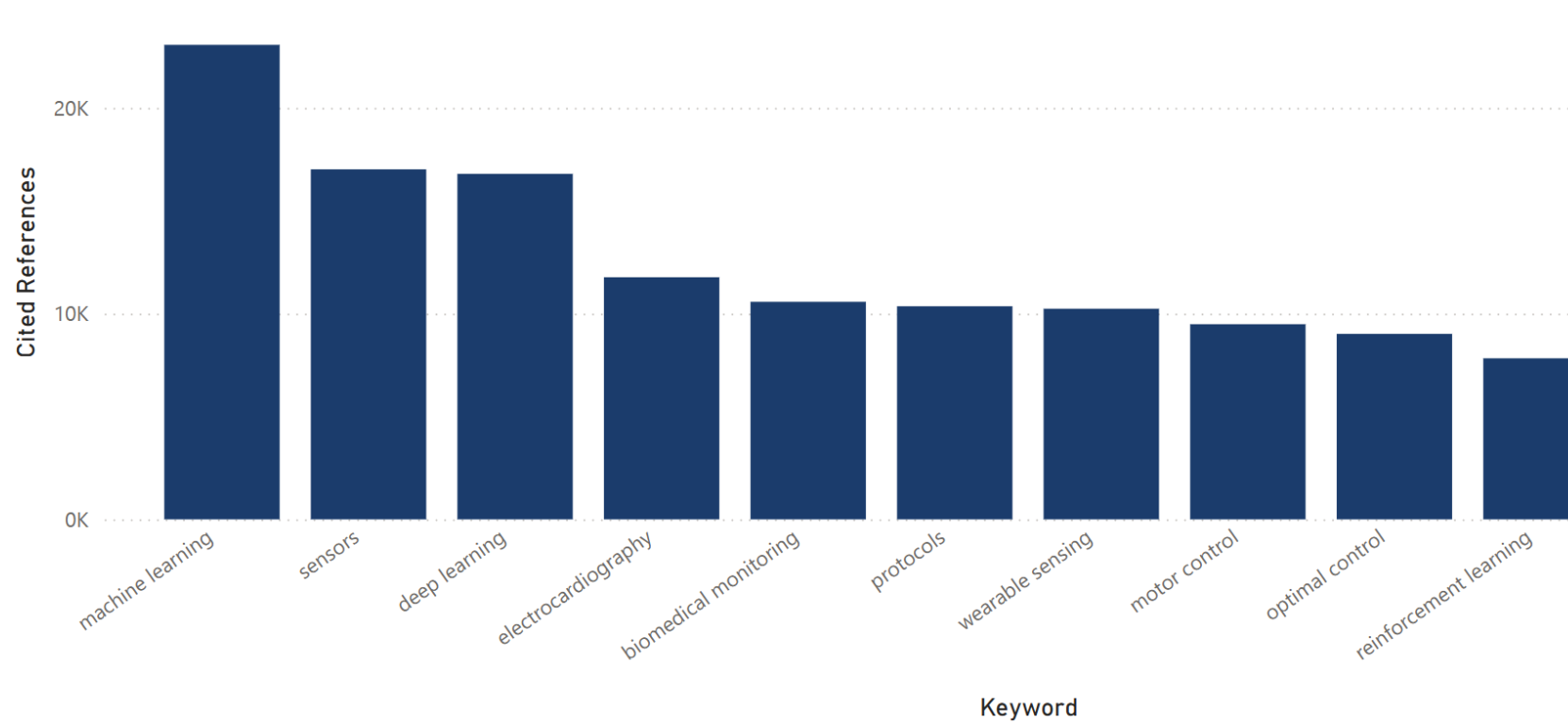


●	Automation & Control Systems	156
●	Chemistry	164
●	Computer Science	56
●	Engineering	1200
●	Instruments & Instrumentation	380
●	Materials Science	142
●	Neurosciences & Neurology	100
●	Physics	336
●	Robotics	571
●	Science & Technology - Other Topics	160



Publication Analysis: Diverse & Prolific

The IRIM community produce many publications annually and are highly cited. Keywords showcase the broad strength of the robotics community and the tie into the **Big Bet 4.2 Medical Innovation Hub for wearables and biomedical monitoring.**





Landscape Analysis

Strategic Analysis Overview

This slide outlines the key components and insights from our strategic analysis that inform the realignment recommendation

Internal Factors

Voice of the Stakeholder



Voice of the Employee



Georgia Tech Strategic Plan



Bringing it All Together

S <i>Strengths</i>	W <i>Weaknesses</i>
O <i>Opportunities</i>	T <i>Threats</i>

External Factors



PESTLE Analysis



Benchmarking



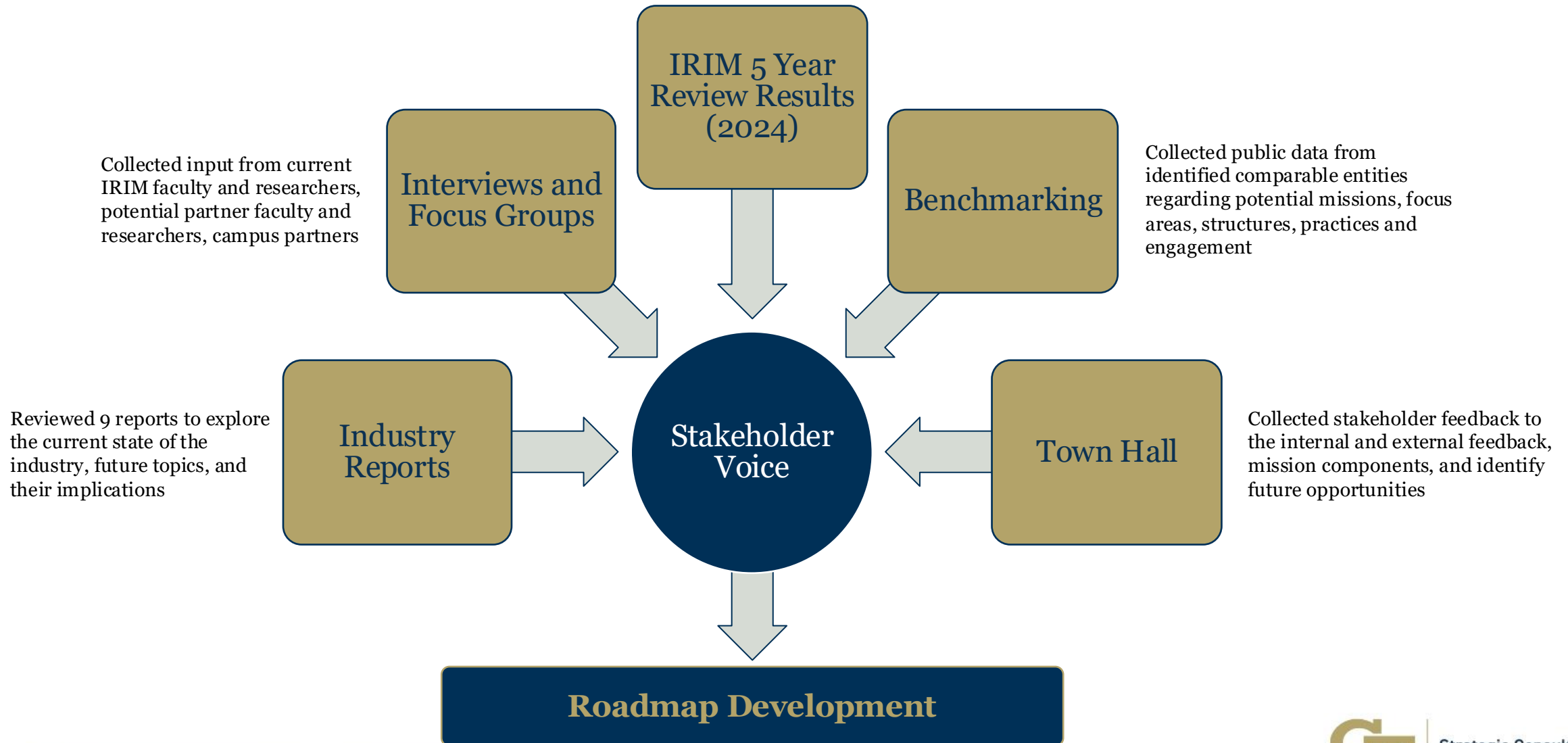
Market Analysis

Voice of Stakeholder

The project team collected input through various interactions with key stakeholder groups across IRIM, GT, and the community to identify strengths of research, culture and processes.

Voice of the Stakeholder | Internal & External Analysis

The project team collected input through various interactions with key stakeholder groups across IRIM, GT, and the community to identify strengths of research, culture and processes. This process also identified recommendations for implementation and a potential roadmap for implementation. See slides 6-8 for overview.



Strengths of IRIM: Stakeholder Perspectives

This information was gathered from stakeholders throughout the project via conversations

	Identified Strengths	Community Based Insights
Strategic	Interdisciplinary Innovation & Societal Impact	<ul style="list-style-type: none"> • There is emphasis on interdisciplinary technical research from the engineering and computer science disciplines with broad range, variety and diversity of areas of expertise • Breadth within Colleges • There are examples of interdisciplinary grants and collaboration efforts to solve challenges • Seed grant program promotes collaboration across different areas • Lots of highly successful top robotics labs and PIs • Critical mass of faculty drives strong publication presence at international conferences with scholarly rigor creating 'high reputations' • Current research is 'high impact and relatable to public' • Robotics could integrate into various industries and verticals, creating potential broader impact to apply robotics to solve diverse challenges
	Academic Reputation & Leadership	<ul style="list-style-type: none"> • Top academics related to Robotics that 'can be leveraged for branding' • The strong PhD program • Technically interdisciplinary academic program • National and international name recognition
Operational	Infrastructure & Community Engagement	<ul style="list-style-type: none"> • Access to unique labs and the number of resources, robots, and computers • Strength of the labs and expertise • Numerous events to engage faculty, students, and industry ie ICRA party • Active engagement with the robotics research community at GT • Convene around potential topics like industrial robotics • Some [financial] investment from state, city, and the institute
	Student Excellence & Impact	<ul style="list-style-type: none"> • Students in a top rated program high-achieving with 'freedom to pursue interests' with societal and industry impacts • Existing collaboration between labs provides students exposure to other student's experiences and knowledge
Culture	Collaborative Culture & Technical Synergy	<ul style="list-style-type: none"> • Stakeholders noted strong collaborations in the technical domains creating innovative technical solutions • Stakeholders self-identified as 'lacking ego, are relatable, approachable' • Stakeholders self-identified that GT is collaborative 'supports and permits exploration. Allows faculty to discover how to excel.'

Weaknesses of IRIM: Stakeholder Perspectives

This information was collected from stakeholders **before the Town Hall**, during interviews, ad hoc conversations, and faculty roundtables.

Identified Weaknesses		Community Based Insights	
Strategic	Limited Institutional & Strategic Alignment	<ul style="list-style-type: none"> • GT is a state institution and has affordances that can be constraining • GT Bureaucracy & bean counting • Lack of long-term objectives and no common mission • Strengths don't fit the IRI metrics • Develop a master plan or roadmap for funding requests and projects • Ensure research areas align with high-level strategic goals while remaining adaptable to emerging trends and innovative solutions from grassroots levels • Clear metrics of success and objectives are needed for clear action planning and alignment • Emphasize visionary leadership in areas like ethics and data in robotics 	
	Research Infrastructure & Facilities	<ul style="list-style-type: none"> • Lack of well-funded research centers desiring more robots & facilities • Need shiny building to show off capabilities • No common physical space • Decentralization of labs/hardware (which impacts demonstration tours) 	<ul style="list-style-type: none"> • Limited processes and practices to ensure effectiveness and increase agility <ul style="list-style-type: none"> • Inter-lab communication, resource sharing, etc. • Centralized hardware library, robotics platform sharing system, image management support • Lack of facility coordination • Strengthen collaboration between GTRI and GT to advance technologies to higher TRLs for successful commercialization
Operational	Internal Collaboration & Engagement	<ul style="list-style-type: none"> • Limited familiarity outside of IRIM's seminar series • More "friendraising" opportunities within GT and outside of GT • Culture of Award (More social events) • Additional support for junior faculty involvement in interdisciplinary projects • Improve the industry engagement and visibility on campus with more speakers, networking, and partnership opportunities 	<ul style="list-style-type: none"> • Database of experts/IRIM members • Faculty-only engagement opportunities • Improve collaboration across different disciplines including STEM fields and non-STEM fields (arts and ethics) • Physical division across campus creates challenges to some engagement efforts
	Communications	<ul style="list-style-type: none"> • Better communications • Poor messaging and outwardly facing PR 	

Opportunities of IRIM: Stakeholder Perspectives

This information was collected from stakeholders during the **Town Hall**, interviews, ad hoc conversations, and faculty roundtables.

Identified Opportunities	Community Based Insights
<p>Strategic</p> <p>Strengthen Regional Economic Positioning</p>	<ul style="list-style-type: none"> • Supply Chains Moving to ATL and GA • Connections with Medical Facilities • Create more startups • Create a Conference
<p>Build Strategic Industry Partnerships</p>	<ul style="list-style-type: none"> • Large team formation (industry and academia) for external engagement • Engage industry to support academic programs like internships, capstone, etc. • Create master research agreements (MRAs) for industry engagements • Centralize Industry Sponsors - Leverage Alumni List • Increase Industry Engagement for funding
<p>Expand Talent Development & Workforce Readiness</p>	<ul style="list-style-type: none"> • Internships from companies • Engage industry to support academic programs like internships, capstone, etc. • Labor shortages
<p>Lead in Societal Relevance & Ethical Impact</p>	<ul style="list-style-type: none"> • Conducting research for and about the aging population and shifting demographics • Better describe the societal and ethical impacts of IRIM research • Help non-roboticists work with robots • Feed the World • Local impact: How can we collaborate with local businesses, healthcare, facilities, etc. To make meaningful local impact? • Conducting research for and about the aging population and shifting demographics • Better describe the societal and ethical impacts of research
<p>Invest in Research Capacity & Infrastructure</p>	<ul style="list-style-type: none"> • Fund center proposals internally or ERC • More Robots & Facilities (shared)

Threats of IRIM: Stakeholder Perspectives

This information was collected from stakeholders during interviews, Town Halls, ad hoc conversations, and faculty roundtables. Not all of the identified threats are externally focused but were kept where feedback was collected.

Identified Opportunities		Community Based Insights
Internal Threats	Fragmented Infrastructure & Visibility	<ul style="list-style-type: none"> • Space • No common showcase • Spread out, not well connected (on-campus) • Inability to wow with industry tours
	Limited Industry Engagement	<ul style="list-style-type: none"> • Industry Engagement (lack of industry engagement with GT)
	Overcome Operational & Cultural Barriers	<ul style="list-style-type: none"> • Silos • Limited time with continuous demands • Negative impact on faculty research productivity due to growing student-teacher ratios in classes • Language (Jargon) • Manufacturing resources
External Threats	Reduced Government Support for Research	<ul style="list-style-type: none"> • Federal funding cuts • Federal government decreased spending • State politics not supporting research • State/Government intervention • Administration cut of funding • Dismantling of academic research
	Compete with Global and National Innovation Hubs	<ul style="list-style-type: none"> • Geography / Not the Bay Area • Global investment in Asia (Japan, Korea, China, Taiwan) • International Collaboration
	Compete with Private Institutions for Resources	<ul style="list-style-type: none"> • Philanthropy (vs. Private universities)

Voice of the Employee

These insights were gathered directly from employees through a variety of engagement channels, including interviews. All feedback has been preserved to honor the perspectives shared and to ensure a comprehensive understanding of the employee experience

Identified Opportunities	Community Based Insights
Role Clarity and Structure	<ul style="list-style-type: none"> • There are challenges with unclear roles and responsibilities creating inefficiencies • Staff overloads for those with specialized skills and are overburdened • Need for an organizational structure that supports current workload • Current unit structure is misaligned with IRIs and goals
Culture & Team Dynamics	<ul style="list-style-type: none"> • Culture of ‘making it work’ • Lack of processes • Grassroots effort to build culture (ie social activities) • Lack of cultural transparency • Limited shared space for community building • Team is self-organizing to provide kudos and recognition
Collaboration & Cross-Functional Integration	<ul style="list-style-type: none"> • Difficulty connecting with new faculty and handling joint appointments • Desire to facilitate more interactions with GTRI • Need for better systems to identify funding opportunities and faculty synergies
Process & Infrastructure Gaps	<ul style="list-style-type: none"> • Need for streamlined processes for faculty engagement • Lack of infrastructure (meeting space, shared tools) • No clear process for start-ups • Desire for new software to support training and communication
Training & Knowledge Sharing	<ul style="list-style-type: none"> • Need for cross-functional training and ‘teams within a team’ • In-depth role training is lacking • Desire to share available resources more effectively

Detailed Community Insights and Feedback from the May 6 All-hands Town Hall

IRIM can continue to catalyze the interdisciplinary research community by:

- Supporting big proposals with infrastructure for MURI efforts and offering seed grants to foster interdisciplinary collaboration and idea-generation
- Organizing more related events (internal- and external-facing), social gatherings and celebrations, industry engagements, and idea-generation events to enhance collaboration and community bonds
- Creating welcoming gathering spaces to connect
- Raising awareness of opportunities to engage in related areas of interest across campus
- Un-siloing research by defining grand challenges, fostering interdisciplinary faculty engagement, and incubating innovative ideas to establish potential centers

IRIM can continue to educate key stakeholders and prepare the future workforce by:

- Strengthening outreach to bring in external engagement to enhance industry-university collaboration, train the next generation of roboticists, but also retrain the existing workforce
- Facilitating industry-university collaborations to include faculty sabbaticals at industry and internships to build industry relations
- Highlighting the role of robotics to influence and improve the future of work
- Integrating policy, ethics, and safety into unit engagements
- Expanding grad student internships and GRA funding opportunities

IRIM can continue to cultivate vision, influence, and recognition for research by:

- Promoting inquiry and curiosity for topics beyond technical problems to solve grand challenges (like how to feed the world)
- Showcasing how robots enhance human capabilities to create 'superpowers', rather than replace humans
- Collaborating
- Engaging in defining conversations at the federal and state level to showcase expertise and influence

IRIM can continue to enhance resources for research by:

- Providing and managing core facilities with standardized test beds and research engineers to support equipment.
- Establishing a dedicated robotics hub building.
- Enhancing the expertise of personnel to support research by:
 - Establishing endowed faculty positions or professorships
 - Creating chairships and fellowships
 - Developing an IRIM team directory to identify potential collaborators
 - Creating SWAG for community building and attracting personnel
- Securing financial or equipment donations for:
 - Seed grants that include at least one new faculty member,
 - Industry funding for ongoing research activity stability,
 - Leveraging student expertise and collaborations to bring faculty together,
 - Demonstrating unity and capabilities to attract donations showcasing a well-organized institute
- Supporting major infrastructure and equipment grants by providing staff support for large initiatives and identifying, encouraging, and recognizing junior faculty involvement

IRIM can continue to accelerate technology- and knowledge-transfer by:

- Focusing on transformative innovations, ensuring high performance and safety standards, and creating real-world impact
- Cultivating partnerships that align the needs of practitioners with problem-solvers, organize mixer events for senior and junior faculty networking, and invite non-roboticists to activities
- Improving and utilizing the alumni network more
- Engaging and supporting start-up initiatives through NSF I-Corps training and educating the robotics community about the entrepreneurial landscape
- Enhancing the knowledge and supporting the intellectual property process to include financial cuts for faculty

Key Themes for IRIM's vision

These key themes are based on the information provided at the [May 6 town hall](#) and reflect the guiding principles and vision of IRIM highlighting your crucial role in shaping IRIM's future.

- Collaboration
- Innovation
- Community
- Support
- Engagement
- Development
- Impact
- Ethics
- Training
- Recognition

Our mission is to ignite collaborations across the Georgia Tech campus, our local communities and around the world to imagine robotic systems that enhance human capability to sense, think and act in order to improve how people live, work and play across their lifespan.

External Factors Impacting the Robotics Field

This slide outlines key external influences that should inform the planning, development, and execution of IRIM components.

<p>P</p> <p>POLITICAL</p>	<p>E</p> <p>ECONOMIC</p>	<p>S</p> <p>SOCIAL</p>	<p>T</p> <p>TECHNOLOGICAL</p>	<p>L</p> <p>LEGAL</p>	<p>E</p> <p>ENVIRONMENTAL</p>
<ul style="list-style-type: none"> •AI Priority with focus on health, neuroscience, energy. •Funding Cuts from reduced NSF support despite AI push. •Disjointed agency programs. •Trade Strain and global collaboration at risk. •R&D Shift with emphasis on security, competitiveness. 	<ul style="list-style-type: none"> •Regional Growth focuses on tech hubs for private investment. •VC Surge: Investment rose from \$406M (2018) to \$13B (2022). •New Frontiers: Spatial computing & AI unlocking markets. •Sector Shift from manufacturing to life sciences & agtech. •Onshoring Trend: Trade tensions drive domestic production. •Robot Adoption expanding across logistics, healthcare, services. 	<ul style="list-style-type: none"> •New frameworks needed for AI agent adoption to build trust. •Aging Support and Companion robots offer social/emotional aid. •Rising Concerns about safety, privacy, and accountability growing. •Job Displacement as automation drives retraining needs. •Talent Race in AI, robotics, data science. •Cultural Shifts with diverse population reshaping preferences. 	<ul style="list-style-type: none"> • R&D Priorities: Focus on AI, quantum, wireless, advanced manufacturing, and climate resilience. • Robotics Innovation with advances in soft robotics, swarm systems, and humanoids are key. • Demand for energy-efficient, real-time, perceptive systems. • Multidisciplinary Approach with collaboration across ethics, tech, policy, and public is essential. 	<ul style="list-style-type: none"> • IP & Integrity with legal protections shape readiness and deployment. • Institutional Flexibility to reduce red tape • Regulatory Uncertainty may hinder robotics adoption. • Data Regulation, AI, privacy and cybersecurity laws affect adoption. 	<ul style="list-style-type: none"> • Performance vs. Sustainability in AI/robotics must balance both. • Eco-Robotics boost efficiency, cut waste in key industries. • Robots improve safety, reduce impact in hazardous environments • Circular Economy that emphasizes reuse and low-waste practices. • Space Sustainability to address debris and orbital congestion.

Benchmarking

Executive Summary

Mission



Emphasis on **collaboration, innovation, practical application, challenging problems** and **multi-disciplinary** approaches. Some institutions emphasize human and societal impacts and futuristic problem solving. Institutes and centers affiliated units have robotics-related missions; units where robotics is a research area or theme highlight research capabilities and collaborative efforts

Focus Areas



Focus areas and themes typically include autonomous systems, ML and AI, Human-Robot Interaction, Manufacturing and Industrial Automation, and Perception and Sensing. Interdisciplinary areas metamaterials, wearables, neuroscience, natural language instruction, physics-based animation, moon planning, biological and bioinspired systems

Organization Structure and Leadership



Robotics are organized into centers, institutes, embedded research areas and themes within other areas. Centers and institutes have distinct missions, often located in the Schools of Computer Science, Engineering, and Applied Sciences with research themes, faculty-led labs and facilities. Partnerships with other schools and departments broaden research. Core faculty from computing, AI, robotics, electrical, systems, and mechanical engineering, and materials science. Strategic leadership is provided by institute/executive directors and programmatic staff, focusing on research, policy, graduate programs, or an executive committee



Executive Summary

Commercialization Practices



Practices include partnering with university resources for research development, prototyping, IP, startup support, and industry partnerships through the Office of Tech Licensing. Additionally, these units engage with high-impact technology programs, secure early-stage capital from institute funding sources, obtain sponsored research funding, and support industry partnerships

Industry Engagement Opportunities



Highlight building relationships among faculty, students, industry and startups. Opportunities include access to students, faculty and labs, event sponsorship, fair labor wage with minimal overhead, speaker engagements, funding chairs or centers, and an industry advisory board. A membership fee structure is utilized by a few units

Overall Summary



Among comparable entities, there is no standard organizational structure or leadership model for robotics at universities. Centers and institutes typically have a mission, leadership structure, and affiliation with a college or department, with core faculty primarily from computing and engineering disciplines and limited representation from non-science or technology fields. Like university-affiliated units, IRIM emphasizes collaboration, innovation, practical application, and tackling challenging problems through multi- or interdisciplinary approaches but lacks a specific mission. Each university affiliate partners with their Tech Licensing and high-impact partnerships for commercialization, except NREC, which focuses solely on commercialization and industry engagement. IRIM has similar industry engagement activities, with potential options including, sponsorship tiers, funding centers, an industry advisory board, or fair labor wage support.

Benchmark Entities & Criteria

Benchmarking Criteria

1. Mission
2. Focus Areas
3. Organizational Structure
4. Core Facilities
5. Commercialization Practices
6. Industry Engagement

Academic Entities

Carnegie Mellon University



CORNELL TECH



HARVARD UNIVERSITY



Oregon State University



Non-Academic Entities



Benchmarking: Academic Entities

Mission

The Robotics **Institute** at Carnegie Mellon University brings together the top scientific minds, intent on solving humanity’s toughest challenges through robotics.

Encompassing the practical and the theoretical, we push the boundaries of collaboration to develop interdisciplinary solutions touching nearly every aspect of human life.

Our curriculum is informed and crafted around building robotic systems that can sense, think, and act in the real-world.

Commercialization Process

NREC develops custom solutions from concept to commercialization to industry partners and government sponsors. 350+ projects successfully delivered with \$600M in funding.

Framework of Technology Readiness Levels (TRL), a conceptual framework developed by NREC’s earliest partner organization, NASA, during the Apollo program to evaluate both relatively novel ideas and close to commercial-ready technologies and advances applied research prototypes that are tested in a variety of environments.

Organizational Leadership and Structure

- Organized within the School of Computer Science, the Robotics Institute, a multi-disciplinary department, and the NREC as a tech transfer organization. RI and NREC each have a Director
- The Robotics Institute has 100+ projects and is the largest university affiliated robotics research group in the world. NREC has 150+ robotic experts
- RI is organized by 4 research themes: sensing and perception, thinking about actions, interacting with the world, and robot embodiment. Includes 57 labs with 71 faculty members from computer science, mechanical engineering, electrical engineering, psychology, and others.

Core Facilities

- 200,000 sq ft of facilities including 50+ labs
- National Robotics Engineering Center (NREC) - Applies robotic technology to commercial and defense applications,
- Field Robotics Center (FRC) – mobile robots in dynamic field environments,
- Robotics Innovation Center – 150,000 sq feet of research space for research, integration, and commercialization
- Extended Reality Technology Center - boost research and development of augmented and virtual reality technologies, catalyzing their adoption in industry and society at large

Focus Areas

Autonomous Systems	Perception and Sensing
Manipulation and Control	Human-Robot Interaction
Machine Learning and AI	Manufacturing and Industrial Automation

Industry Engagement

Has spawned over 30 spin-off companies and has helped attract companies such as Google, Apple, Intel, Caterpillar, and Disney to Pittsburgh.



Mission

No robotics mission. Cornell Tech’s fully equipped robotics lab allows researchers to go beyond theory and conduct empirical testing and field research of the highest quality.

Commercialization Process

Process is managed by the Center for Technology Licensing (CTL), which oversees the technology transfer and commercialization of innovations including research & ideation, disclosure, evaluation, protection, marketing & licensing, entrepreneurial support. Other programs provide support to postdocs to build a business, turn your PhD into a CEO and to help corporate professionals and individuals backed by venture capital firms develop their ideas.

Organizational Leadership and Structure

Imbedded within Cornell University, utilizing interdisciplinary department and research labs; Cornell Tech’s labs and initiatives are highly collaborative environments where faculty and students pursue new lines of inquiry across theoretical and applied areas of technology. The Robotics Lab is included in the AI Lab, along with computer vision, ML, NLP, Game & Decision Theory, and AI & Immersive Health.

Core Robotics Facilities

- Drone Cage
- Fabrication equipment
- High-speed motion capture system
- VR systems
- Labs

Cornell Tech is organized by research lab:

MakerLab	AI	Business & Entrepreneurship	Data & Modeling
Human-Centered Computing	Law & Policy	Security & Privacy	Technology, Society, & Ethics

Robotics Focus Areas

- Autonomy to develop autonomous systems
- Enhancing robot design and sensory capabilities
- Control and machine learning algorithms
- Human-robot interactions
- Exploring coordination and collaboration among multiple robots

Industry Engagement

Collaborates with industry partners to support innovation, promote technological breakthroughs, and build lasting relationships that benefit students, faculty, and external partners. Partnerships include with the academic units and the tech licensing offices, innovation competitions and programs

Mission

No official mission. **Research area** highlights its collaborative teams, revolutionize work, education and everyday life the way the internet did.

Commercialization Process

SEAS has a partnership with the Office of Technology Development utilizing: research development, prototyping, intellectual property, startup support, and industry partnerships.

Organizational Leadership and Structure

Research focus area imbedded in the School of Engineering and Applied Sciences. Organized by 5 research labs. Partnerships with the Harvard Medical School, Graduate School of Design, and the Wyss Institute at Harvard (R&D engine for bioinspired tech).

Core Facilities

- Motion capture labs
- Soft robotics lab
- Access to the Nanoscale Research
- ICCB-Longwood Screening Facility
- Move lab
- Flight labs
- Biodesign lab
- Scientific Shops
- Metamaterials

Core faculty in Bioinspired Robotics and Computing (10) and Biomechanics and Motor Control (17) and student orgs (2)
20 Affiliated Faculty, Director of Industry Partnerships

11 Research Groups, Centers and Initiatives organized around algorithmic foundations in perception, action, and learning, understanding and designing complex and emergent systems, bionics, biorobotics, microrobotics, human performance, materials. And student robotics club.

Focus Areas

- Soft wearables
- Autonomous search and rescue
- Bioinspired robots
- Smart clothing
- Medical Robots
- Automated assembly at scales
- Industrial robots
- Metamaterials

Industry Engagement

Program is affiliated with the school and provides opportunities for research, direct student and faculty engagement, etc.



Oregon State
University

Mission

To create a better future... we design and build intelligent robots to improve human lives. Discusses innovation through collaboration

Commercialization Process

Utilizes the larger university process for research and development, prototyping, IP, startup support, and industry partnerships

Organizational Leadership and Structure

Collaborative Robotics and Intelligent Systems (CoRIS) **Institute** within the College of Engineering. Led by Institute Director, 2 graduate program directors, Director of Research, and Director of Policy.

Organized by 12 faculty led research labs, 2 national and international collaborations, and provide leadership to 3 labs, 8 AI research labs, and has 2 research facilities.

Core Facilities

- 12 labs
- Huang Complex – 143,000 sq ft for team-based transdisciplinary research and teaching
- O.H. Hinsdale Wave Research Laboratory - 61,000 ft houses the Large Wave Flume (LWF), Directional Wave Basin (DWB), and office space
- Gaulke Center for Marine Innovation and Technology

Focus Areas

The culture of collaboration leads to research in agriculture, forestry, oceanography, and many other areas including:

- | | |
|-------------------------------------|-----------------------------------------------------|
| Advanced Manufacturing | Data Science and Engineering |
| AI and Robotics | Next Generation Materials and Devices |
| Computer Graphics and Visualization | Software Engineering and Human-Computer Interaction |

Industry Engagement

Partners can engage in collaborative research, industry research agreements, access to labs, collaboration with students, fair labor rates with minimal overhead



Mission

The Stanford Robotics Center (SRC) brings together cross-disciplinary world-class researchers and industrial affiliates with a shared vision of robotics' future. Its unique collaborative facility supports large-scale innovative projects for transformative impact on people and the planet.

Commercialization Process

The process starts with R&D, partner opportunities with the Office of Tech Licensing, engagement with HIT (High Impact Technology) fund to provide funding, industry executive advisors, and strategic introductions to investors.

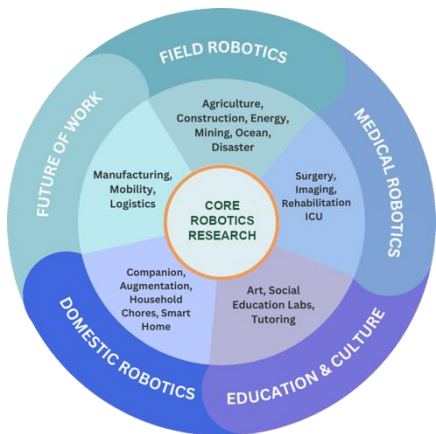
Organizational Leadership and Structure

Organized within the School of Engineering, and includes 20+ labs and centers. Faculty are included from robotics, AI, computer science, electrical engineering, mechanical engineering, and materials science. SRC is led by the Director and Executive Director with an Executive Committee.

Core Facilities

The Center dedicated to in-situ development of focused technology Flagship projects, sharing a 3000 sq. ft. common area for robotic experiments. The suites includes Human-Centered Robotics, Domestic Robotics, Medical Robotics, Field Robotics, a special aquatic suite for Underwater Robotics and a Dance Studio.

Focus Areas



- Field Robotics
- Domestic Robotics
- Medical Robots
- Future of Work
- Education and Culture

Industry Engagement

SRC Affiliates Program includes access to the Center's wide spectrum of technologies and real-world applications, scholar exchanges, retreats, seminars, and training programs, faculty liaison, and engagement with the Advisory Board.

Founding membership is \$333,000 per year to fund research projects, build up SRC core robotics capabilities, and support other programs and activities.



Mission

Creates and leads innovative initiatives and robust programs that elevate outcomes for both robotics and roboticists in research, academics, and society

Commercialization Process

Innovation Partnerships team of licensing, business development, corporate research and venture professionals provide invention assessment and intellectual property support to business mentoring, translational research funding and early-stage capital from the Accelerate Blue Fund.
Support for faculty-led spin-offs and open-source projects

Organizational Leadership and Structure

- Within the College of Engineering
- Led by an Executive Committee of 6 for strategic direction, vision, and strategic planning.
- Organized by 12 focus areas and has 3 values (robotics with respect, enthusiastic outreach, and integrity in action)

Core Facilities

- Ford Robotics Building – 134,000 sq ft; with 3 story fly zone, outdoor obstacle course, high-bay garage, rehab lab, robotics maker space, outdoor Mars Yard,
- M-Air – 10,000 sq ft netted facility for aerial testing
- Makerspace
- M-city for autonomous and connected vehicles
- Access to other Engineering facilities

Focus Areas

AI	Manufacturing Robotics	Moon Planning
Autonomous and Connected Vehicles	Perception & Manipulation	Teams & Swarms
Deep Learning for Robotics	Rehabilitation Robotics	Legged Robots & Exoskeletons
Human-Robot Interaction	Safe Autonomy	Simultaneous localization and mapping

Industry Engagement

Industry engagement program provides opportunities for:

- | | |
|-----------------------|---------------------------|
| Speaker engagements | Design projects |
| Sponsor student teams | Sponsored research |
| Career fairs | Funding chairs or centers |
| Course Engagement | |



Mission

Research in GRASP is better with a heterogenous team in a collaborative incubator environment that fosters collaboration between students, research staff and faculty focusing on fundamental research in vision, perception, control systems, automation, and machine learning.

Commercialization Process

operates as a hub for connecting our research with the venture capital that entrepreneurs provide. The I-Corps program is an NSF-funded program for developing faculty and student startups. 10 startups associated with the lab, and 1 acquired startup.

Organizational Leadership and Structure

- Organized around the GRASP lab within the School of Engineering and Applied Science by 7 research areas and 12 research groups.
- Departments involved led by Computer and Information Science, Mechanical Engineering and Applied Mechanics, and Electrical and Systems Engineering.
- Programmatic Offerings: Courses (MSE), Research Opportunities, Networking, and Seminars.
- Led by a Director, 16 faculty members, 90+ PhD and 130+ Robotics Master’s graduate students and over 50 undergraduate students, and research staff

Core Facilities

GRASP Laboratory has 2 locations with 12 labs: Autonomy and intelligent robotics, safety algorithms, dynamic systems focused in biologically inspired robots, autonomous ground and aerial robots, machine learning, modular robotics, nonrobotics, perception, action and learning, novel therapy robots, control and coordination, computational methods in soft and compliant robots.

Access to Engineering Labs (Nanoscale, nanofabrication, scanning and local probe, and computer graphics center, lithography, student-run tech hub)

Focus Areas

Biological Systems, Human and Social Interaction	Computer Vision and Perception
Dynamical Systems and Control	Machine Learning/AI and Autonomous Systems
Multi-robot and Multi-agent Systems	Planning, Mapping, Estimation, and Localization
Robot and Mechanism Design	

Industry Engagement

GRASP Corporate Affiliate Program is an annual membership with access to propose capstone projects for MSE students, Invitations to members-only research seminars or visit days, Waived registration, Prioritized access to GRASP’s resume book and recruiting events



Mission

No official mission. Description includes multi-disciplinary expertise to attack the most challenging problems in field by defining large-scale joint initiatives

Commercialization Process

Utilizes the UW commercialization team to support research and development, prototyping and testing, intellectual property, startup support, and industry partnership support

Organizational Leadership and Structure

- Within the Computer Science & Engineering departments.
- Engineering department focuses on manufacturing
- Organized by 6 research labs
- No executive director, only faculty lab leads with postdocs and students
- Student org – Advanced Robotics with 70+ students from engineering, computer science, physics, art, and business

Core Facilities

6 research labs in Computer Science in human-centered robotics, personal robotics, robotics and state estimation, robot learning, sensor systems, and embodied intelligence and robotics.

Robotics is core to Center for Neurotechnology, Amazon Science Hub around robotics in a collaborative and inclusive environments, and the Boeing Advanced Research Collaboration to support the future of flight.

Focus Areas

mechanism design	Sensors and computer vision	mobile manipulation and human-robot interaction
robot learning and Bayesian state estimation	natural language instruction and physics-based animation	computational neuroscience and brain-machine interfaces
numerical optimization and control theory	Biomechanics and neural control of movement	

Industry Engagement

Engagement through the college, for collaborative research projects, internships and job placement, industry advisory boards, and the UW Robotics Colloquium sponsored by Amazon featuring talks every Friday.

Benchmarking: Non-Academic Entities

Mission

A non-profit organization aimed to nurture the entire robotics and automation landscape in Georgia, recognizing the unique challenges and opportunities across the spectrum—from emerging startups to established enterprises

Broader Engagement Opportunities

RoboGeorgia can engage with IRIM through:

- Networking – to build relationships and showcase your work
- Collaborate – overcome operational roadblocks and uncover new practical applications
- Continuing Education – Stay in touch with the latest developments and trends
- Mentorship - Give back to the community by mentoring young and aspiring professionals

Organizational Structure

It is member driven with original equipment managers, integrators, end users, startups, research institutions, distributors.



RoboGA helps businesses innovate, find talent, engage with business development, and increase visibility.

Focus Areas

- Focus on uniting the robotics and automation community
- Empower the robotics and automation workforce
- Seed and inspire innovation
- Fuel economic growth
- Essential resources
- Networking platforms
- Advocacy to address the diverse needs within this ecosystem

Collaboration Opportunities

- Pitch competitions
- Hackathons
- Conferences
- Entrepreneurial education
- Other events

Mission

Help create and scale the next generation of successful global robotics and connected device companies by providing entrepreneurs and innovative robotics and automation startups with the workspace and resources they need to develop, prototype, test and commercialize their products and solutions.

Organizational Structure

A nonprofit organization that is world’s largest independent robotics hub dedicated to accelerating robotics innovation, commercialization and adoption. headquartered in Boston, supports the global acceleration and adoption of robotics by collaborating with startups, academia, industry, and governments both domestically and internationally.

Focus Areas

- Promoting technology innovation
- Enhancing workforce development
- Supporting robotics startup and business growth

Broader Engagement Opportunities

- Educational Events to inspire future innovators and spread awareness of robotics
- Mentoring opportunities to startups and entrepreneurs
- Community involvement to encourage participation in projects and initiatives

Collaboration Engagement

- Working groups to meet industry needs and improve the use and adoption of robotics
- Collaborating with companies to support robotics and automation initiatives
- Partner with institutions to promote research and innovation
- Working with government and community organizations to build a thriving robotics ecosystem

Mission

support the commercialization of robotics, autonomy, and AI companies operating in the Greater Pittsburgh region; connect the community of SW Pennsylvania to global markets and resources

Broader Engagement Opportunities

The have a 3-tiered network membership centered on knowledge sharing and collaboration.

- Networking and Promotion and Events
- Business Webinars
- Discussion Forms
- Mentor Networks
- Industry Conferences
- Recruiting Events
- Talent Development Consultation
- Community Initiatives

Focus Areas

Robotics
Autonomy
AI

\$7.5B in investments across industries including agriculture, healthcare, manufacturing, safety, and inspection and maintenance

Organizational Structure

Members include market leaders, startups, investors, suppliers, service providers, research and development institutions, and community organizations

125+ organizations, 7300 regional employees, and leadership team includes an Executive Director, Project Coordinators, Directors of Partnerships, Communications, Programs, Impact, Engagement

Southwestern Pennsylvania Robotics Talent Advisory Committee advises on talent gaps, recruitment strategies, and training programs, shaping initiatives like Pittsburgh Robotics Discovery Day and other workforce efforts

Collaboration Engagement

Sponsorship opportunities include Deep Tech Happy Hours, panel series, member exclusive events, NVIDIA solution workshops, workforce development events, women in robotics,



Market Analysis

Future of Robotics & Intelligent Machines

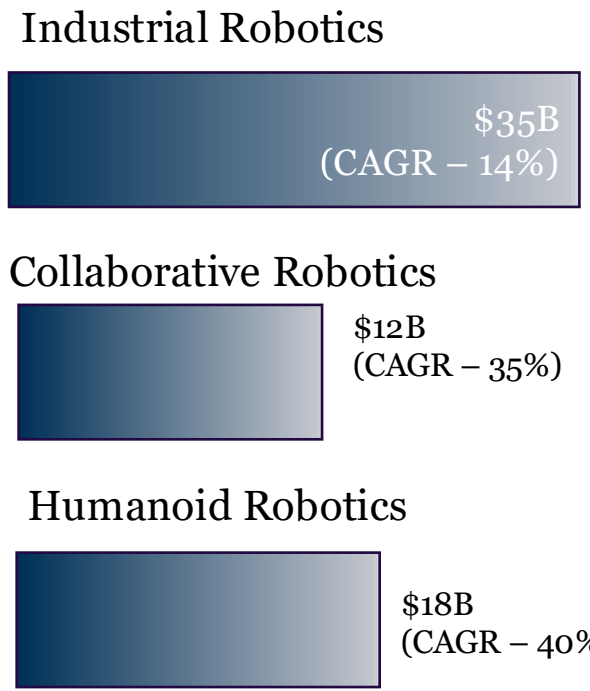
Market research highlights areas where Georgia Tech and IRIM are active or poised to lead—directly supporting Big Bet goals in commercialization, entrepreneurship, research, and lifelong learning.

“The future of the Robotic’s market is set to revolutionize industries and everyday life, driven by rapid technological advancements.”

“Advanced technologies—driving innovation and paving the way for a more sustainable and interconnected future.”

- According to a Fuentek, LLC compiled report from MarketsandMarkets data

2030 Market Projections identified by market research conducted by the Office of Tech Licensing and partner Fuentek.



- AI-Driven Autonomy – Less human intervention, more complex tasks
- Co-bots: Human-Robots collaboration in production
- Sustainability: Energy-efficient, eco-friendly robotics
- Sector Impact: Manufacturing, healthcare, and logistics
- Workforce Evolution: New skills, innovation, and adaptability

ATDC's Robotics Vertical is growing

ATDC's robotics vertical has seen significant growth. It started with 3 companies, has added 22 additional ones and are anticipating 9 more incoming companies. This vertical is sponsored by Amazon Robotics

150
FTEs

Full Time Employees at robotics companies in **ATDC in 2024.**

\$9.5M

Revenue for ATDC affiliated robotics companies in **2024** is \$9.5M.

55%

Of the 9 new startups joining ATDC, 55% have a **GT connection** (faculty and alums).

\$35 M

Capital raised for robotics companies in 2024 is \$35.4M.

RoboGeorgia

A non-profit with a mission is to nurture the entire robotics and automation landscape in Georgia like MassRobotics and Pittsburgh Robotics Network.

State-Wide Ecosystem

Georgia is well-positioned for growth in robotics due to its diverse industry base, strong research universities with commercialization efforts, and key infrastructure like a world-class airport and the Port of Savannah. The state also benefits from a favorable cost of living and quality of life. However, it currently lacks a centralized robotics hub, presenting a significant opportunity for development in this area.

Robotics Industries in GA

