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2024 Deep Tech Talent Initiative Annual Report
Building Utah's Future Workforce: Progress And Impact Of The Deep Tech Talent Initiative

Executive Summary

The Deep Tech Talent Initiative is a critical investment in Utah's future workforce, addressing high-demand fields such as artificial intelligence, biotechnology, cybersecurity, renewable energy, and autonomous vehicles. This initiative, which includes programs at six higher education institutions statewide, serves as a bridge between Utah's educational system and its industries, ensuring students are equipped with technical skills aligned with real-world needs. On behalf of the Utah Board of Higher Education, in 2023, The Utah System of Higher Education's Talent Ready Utah and the Deep Technology Talent Advisory Council continued to fund educational programs supporting Utah's workforce in Deep Technology skills.

Key Achievements and Highlights

- **High Job Placement Rates in Key Sectors:** Graduates from the Deep Tech Talent Initiative programs have achieved impressive job placement rates, filling essential roles in high-demand fields across Utah. Programs in AI, biotechnology, cybersecurity, and renewable energy are producing graduates who secure positions in local companies, including Intermountain Healthcare, Dominion Energy, and PacifiCorp. This impact demonstrates the initiative's role in strengthening Utah's economy by preparing students for careers that are crucial to the state's growth.

- **Strong Industry Partnerships:** The initiative has built robust partnerships with Utah-based employers, offering students real-world experience through internships and hands-on training while guiding curriculum development to match industry standards. Partnerships with companies such as Intermountain Healthcare, Dominion Energy, and local AI startups reinforce that the initiative is actively aligned with Utah's business community and effectively supports workforce needs.

- **Equitable Access and Statewide Reach:** Programs like Utah State University's Remote Sensing and GIS certificates are providing access to advanced tech training for students in underserved and rural communities across Utah. This statewide reach ensures that students in all areas of Utah benefit from economic opportunities in emerging tech sectors, contributing to equitable workforce development across the state.

- **Program Innovation in Emerging Technologies:** Participating institutions have introduced new and innovative programs in fields such as bioinformatics, autonomous vehicle technology, AI ethics, and secure computing. These programs not only meet current workforce needs but also prepare students for roles in rapidly evolving industries, positioning Utah as a leader in technology and life sciences education.

- **Return on Investment and Economic Impact:** The initiative's alignment with high-demand industries and the high employment rates of its graduates demonstrate a substantial return on investment for the state. By preparing a skilled workforce ready to contribute to AI, renewable energy, healthcare, and cybersecurity sectors, the Deep Tech Talent Initiative enhances Utah's economic development and supports its reputation as a growing tech hub.

- **Sustainability and Growth Potential:** With continued funding, the initiative can expand its reach, addressing workforce needs across Utah and adapting to the latest industry developments. The program's proven success provides a solid foundation for scaling these efforts to prepare even more Utah residents for high-demand tech careers.

Future Vision

To continue meeting the workforce demands of Utah's dynamic economy, sustained funding for the Deep Tech Talent Initiative is essential. Continued legislative support will enable this impactful program to expand, innovate, and support Utah's future as a competitive leader in technology and life sciences.

This annual report provides a detailed overview of the initiative's progress, challenges, and outcomes over the past year, demonstrating the profound impact it has had on Utah's workforce, economy, and communities.

Introduction

Established to develop Utah's tech workforce, the Deep Tech Talent Initiative creates, expands, and aligns programs with industry demands in fields like AI, data science, and biotechnology. Participating institutions leverage state funding to enhance program quality and provide students with in-demand skills.

The six institutions involved this year include the University of Utah, Utah Valley University, Weber State University, Utah State University, Southern Utah University, and Utah Tech University.

Progress Highlights

Over the past year, the Deep Tech Talent Initiative has made significant strides in developing a skilled workforce ready to meet Utah's high-tech demands. Enrolling over 2,000 students across 20 programs, the initiative has equipped students with advanced skills in artificial intelligence, biotechnology, cybersecurity, renewable energy, and autonomous vehicles. This wide-reaching effort spans both urban and rural areas, ensuring that students across Utah have access to education that prepares them for high-demand careers.

Employment outcomes from these programs are strong, with many graduates securing positions in prominent Utah-based companies and national firms. For instance, graduates from Utah Tech University's genomics program have joined teams at Intermountain Healthcare, contributing to critical projects in bioinformatics and precision medicine. Likewise, students from the AI and Robotics program at the University of Utah have gained employment in local tech startups, where they are applying their skills to cutting-edge projects that advance Utah's position as a technology hub.

Institutions involved in the initiative have also made significant progress in expanding and innovating their offerings. New programs launched this year include autonomous vehicle technology at Weber State University, renewable energy engineering at the University of Utah, and life sciences training at Utah Tech University. These programs are not only attracting high levels of student interest but are also aligned with industry needs, with curricula co-developed in partnership with local employers. Through collaborations with companies like Dominion Energy, PacifiCorp, and the U.S. Air Force, institutions have integrated hands-on projects and internships into their programs, providing students with real-world experience that enhances their employability upon graduation.

A particularly successful example within the initiative is the Interdisciplinary Integrative Scientific Computing (I3SC) program, a joint effort between Utah State University and Utah Valley University. This program has garnered national recognition for its innovative approach to scientific computing, combining data science, machine learning, and computational problem-solving in fields like bioinformatics and environmental science. The I3SC program has seen high placement rates, with graduates securing positions in computational and data science roles at both national research institutions and leading private-sector firms.

In addition to job placements, the initiative has created new opportunities for internships and industry-aligned training. Many students have completed internships at local companies, gaining hands-on experience that aligns directly with workforce needs in areas such as AI-driven diagnostics, renewable energy, and cybersecurity. These internships not only enhance students' skills but also build strong pipelines between Utah's educational institutions and industries, fostering partnerships that support the state's economic development goals.

Overall, the progress achieved by the Deep Tech Talent Initiative reflects the commitment of Utah's higher education institutions, industry partners, and government supporters to build a competitive, future-ready workforce. With a strong foundation established, this initiative is well-positioned to expand its impact in the coming years, aligning Utah's educational programs even more closely with the demands of its growing economy.

Institutional Summaries

University of Utah
- **Programs**: Robotics Certificates and Graduate Degree Programs, Resilient Energy Engineering Certificate, Secure Computing, Fairness in AI, AI and Robotics, Neurotechnology Certificates & Neuroengineering Graduate Degree Programs, Transportation Infrastructure Electrification Joint Certificate Program, Utah Workforce for Biotherapeutics
- **Achievements**:
    - The Robotics Certificates and Graduate Degree Programs trained over 150 students, with placements in Utah's robotics and automation industries. The AI and Robotics program additionally secured partnerships with local startups, focusing on applied AI projects.
    - The Resilient Energy Engineering Certificate enrolled 60 students, focusing on sustainable energy technology. The program's partnership with Dominion Energy provided real-world energy project experiences.
    - Secure Computing and Fairness in AI prepared over 200 students for careers in cybersecurity and AI ethics, with several graduates placed in data privacy roles. These programs added critical ethical components to Utah's tech workforce.
    - The Neurotechnology and Neuroengineering programs provided hands-on neuroscience technology training, with 140 students benefiting from partnerships with healthcare companies.
- **Industry Collaborations**: Industry partnerships with companies like Intermountain Healthcare, Dominion Energy, and AI startups provide real-world learning, enhancing workforce readiness in AI, cybersecurity, and renewable energy.

Utah Valley University
- **Programs**: Drone-Based AI Training, I3 Consortium
- **Achievements**:
    - The Drone-Based AI Training program engaged 73 students, preparing them for careers in renewable energy and AI-driven diagnostics through hands-on training with drone technology.
    - The I3 Consortium, a collaborative effort with Utah State University, has become one of the most impactful programs in the initiative. It combines scientific computing, data science, and machine learning, and has received national recognition for its innovative

interdisciplinary approach. Over 100 students have participated, with high placement rates in computational science roles.

- **Industry Collaborations**: Partnerships with Dominion Energy and tech companies provide students with applied research experiences, aligning training with industry needs and positioning Utah as a leader in scientific computing.

Weber State University
- **Programs**: Machine Learning Data Science, Autonomous Vehicles, Post-Baccalaureate Certificate in Materials Science and Engineering
- **Achievements**:
  - The Machine Learning Data Science program supported 40 students, with industry-based projects in collaboration with the Data Science Research Center, leading to job placements in data analytics and machine learning.
  - Autonomous Vehicles trained six students in its inaugural year, focusing on automotive technology and collaboration with local automotive firms.
  - The Post-Baccalaureate Certificate in Materials Science and Engineering introduced 15 students to advanced materials analysis, preparing them for roles in manufacturing and engineering.
- **Industry Collaborations**: Partnerships with automotive and tech firms provide hands-on experiences, preparing students for high-demand roles in machine learning, autonomous vehicles, and materials engineering.

Utah State University
- **Programs**: I3 Consortium, Stackable Data Science, Preparing Utah Workforce: From Integrated Photonics to Quantum Computing, New Certificates in Remote Sensing and Geospatial Artificial Intelligence
- **Achievements**:
  - The I3 Consortium, in partnership with Utah Valley University, has trained over 100 students in interdisciplinary scientific computing, receiving national acclaim for its impactful research and innovative approach.
  - Stackable Data Science offers flexible credentials, with 90 students participating and applying data skills in high-tech sectors.
  - Preparing Utah Workforce: From Integrated Photonics to Quantum Computing focuses on cutting-edge fields, training 40 students in photonics and quantum applications relevant to Utah's tech needs.
  - Remote Sensing and Geospatial Artificial Intelligence enrolled 20 students, supporting roles in environmental monitoring and urban planning.
- **Industry Collaborations**: Industry partnerships in energy, environmental tech, and research institutions ensure that graduates have practical skills applicable to diverse industries.

Southern Utah University

- **Programs**: SUU's Artificial Intelligence and Machine Learning Certificate, SUU Training and Online Development Labs and Deep Learning/VR Projects
- **Achievements**:
  - SUU's Artificial Intelligence and Machine Learning Certificate trained 15 students in cybersecurity applications, preparing graduates for high-demand secure computing roles.
  - Training and Online Development Labs focusing on VR and deep learning provided students with advanced tech skills applicable in multiple industries, including tech and cybersecurity.
- **Industry Collaborations**: Partnerships with Utah-based cybersecurity firms provide relevant training, aligning student skills with industry requirements in data protection and VR applications.

Utah Tech University

- **Programs**: Precision Medicine Functional Genomics, Training Life Sciences Graduates
- **Achievements**:
  - The Precision Medicine Functional Genomics program enrolled 131 students, focusing on genomics and bioinformatics, with a curriculum co-developed by Intermountain Healthcare.
  - Training Life Sciences Graduates prepared students in AI applications within biological research, creating opportunities in Utah's growing biotech sector.
- **Industry Collaborations**: Partnerships with Intermountain Healthcare and biotech companies provide internship opportunities and applied learning, facilitating job placements in life sciences and precision medicine.

Industry Summary

Overview of Employer Partnerships

The Deep Tech Talent Initiative has established robust partnerships with key Utah-based employers and industry leaders, bridging educational training with real-world applications and job opportunities. Through these partnerships, students gain hands-on experience, internship opportunities, and direct pathways into Utah's technology and life sciences sectors. Collaborative projects with employers in fields such as AI, biotechnology, renewable energy, and secure computing ensure that training aligns closely with industry needs, improving employability for program graduates.

Key Industry Partnerships

- **Intermountain Healthcare**: Utah Tech University's Functional Genomics program collaborates with Intermountain Healthcare to provide students with real-world insights and

skills in genomics and bioinformatics, directly supporting placements in healthcare and life sciences roles (Utah Tech Functional Ge...).

- **Dominion Energy**: UVU's Automated Wind Turbine Inspection program partners with Dominion Energy to prepare students for careers in renewable energy and AI-driven diagnostics, offering internships and career paths within the energy sector (UVU-Automated Wind Turb...).
- **Edwards Lifesciences**: The University of Utah's Biotherapeutics Training Program connects students with Edwards Lifesciences for hands-on learning in biomedical engineering, leading to direct placement opportunities in medical technology (UoU-Biotherapeutics_v6).
- **U.S. Air Force and PacifiCorp**: Several graduates from Utah State University's Remote Sensing and GIS program have been placed with organizations like the U.S. Air Force and PacifiCorp, supporting roles in environmental monitoring, geographic information systems, and spatial data analysis (USU Remote Sensing and ...).
- **Local Tech Firms (AI and Cybersecurity)**: The University of Utah's AI and Robotics program has developed partnerships with multiple tech firms in Utah, providing students with internship and job placement opportunities in fields like secure computing, ethical AI, and robotics engineering (U of U Robotics) (U of U Fairness in AI).

Placement and Employment Data

The Deep Tech Talent Initiative has achieved notable success in placing graduates in high-demand sectors across Utah's technology and life sciences industries. Each program within the initiative equips students with specialized skills that align with employer needs, contributing to high placement rates and strong early career outcomes. Below is a summary of placement data by field:

Biotechnology and Life Sciences

- Programs: Precision Medicine Functional Genomics, Training Life Sciences Graduates, Biotherapeutics Training
- Placement Rates and Employers: Graduates from these programs have a placement rate of 80%, with students securing roles at organizations like Intermountain Healthcare and Edwards Lifesciences. These roles address essential needs in genomics, bioinformatics, and therapeutic research, supporting Utah's expanding life sciences sector.

Artificial Intelligence and Machine Learning

- Programs: AI & Robotics, Drone-Based AI Training, Machine Learning Data Science
- Placement Rates and Employers: With placement rates of 75% within six months of graduation, students from these programs have found positions in Utah's growing AI industry, working with tech startups and established companies on projects in AI development, robotics, and data science.

Renewable Energy and Environmental Technology

- Programs: Resilient Energy Engineering Certificate, Drone-Based AI Training, Remote Sensing and GIS
- Placement Rates and Employers: Programs in renewable energy and environmental technology report a 70% placement rate, with students employed at organizations like Dominion Energy and PacifiCorp. Graduates contribute to Utah's energy sector through roles focused on AI-driven diagnostics, environmental monitoring, and sustainable energy solutions.

Intelligence and Security
- Programs: I3SC (Interdisciplinary Integrative Scientific Computing) at Utah State University and Utah Valley University
- Placement Rates and Employers: The I3SC programs boast over 75% placement rates within intelligence, cybersecurity, and defense sectors. Graduates have been hired by entities such as the U.S. Department of Defense, intelligence agencies, and private cybersecurity firms, filling roles in data protection, threat analysis, and cybersecurity to support national security.
- Internships and Early Career Opportunities: Strong partnerships with government and industry provide students with internships in secure computing, data analytics, and machine learning for threat detection, directly aligning their skills with industry demands.

Autonomous Vehicles and Robotics
- Programs: Robotics Certificates and Graduate Degree Programs, Autonomous Vehicles, AI and Robotics
- Placement Rates and Employers: These programs report a 70% placement rate, with graduates securing roles in Utah's automotive and robotics sectors. Students have been placed in positions focused on autonomous systems and AI-driven robotics, with employers ranging from local startups to automotive technology companies.

Data Science and Secure Computing
- Programs: Stackable Data Science, Secure Computing, Fairness in AI, Post-Baccalaureate Certificate in Materials Science and Engineering
- Placement Rates and Employers: Graduates in data science and secure computing fields have achieved an 80% placement rate, with students entering positions at local and national data firms. Employers include tech companies specializing in data privacy, AI ethics, and secure computing applications, contributing to the state's data infrastructure and cybersecurity capabilities.

Internship and Hands-On Training Opportunities
In addition to full-time placements, partnerships with Utah companies provide students with valuable internships and hands-on training. For example:

- **Internships with AI Startups**: Through Weber State's Data Science Research Center, 15 students interned with local AI startups, contributing to projects in machine learning and data analytics
- **Energy Sector Internships**: UVU's Automated Wind Turbine Inspection program enabled students to complete internships with Dominion Energy, gaining practical skills in renewable energy diagnostics and AI applications.
- **Healthcare Technology Internships**: Utah Tech's Functional Genomics program facilitated internships at Intermountain Healthcare, allowing students to apply their genomics training in healthcare settings.

Challenges and Lessons Learned

- **Funding and Resource Limitations**: Many institutions faced challenges related to funding for equipment and specialized faculty. Limited resources restricted program capacity, highlighting a need for sustained financial support.
- **Industry Relevance**: Keeping curriculum aligned with rapidly evolving tech trends required ongoing industry collaboration, with some programs adapting courses based on feedback from local employers (U of U Fairness in AI).
- **Hiring and Program Development**: Hiring challenges for faculty with specialized skills were noted, delaying some program expansions and requiring increased support for recruitment in niche technical areas (USU Remote Sensing and ...).

Impact and Value to Utah's Workforce

The Deep Tech Talent Initiative has become an integral part of Utah's workforce development, aligning educational programs with the state's economic goals and providing students with the skills needed to succeed in high-tech industries. By preparing students for careers in fields such as artificial intelligence, biotechnology, renewable energy, and cybersecurity, the initiative is creating a workforce capable of meeting the demands of Utah's rapidly expanding tech sector. Graduates from these programs are entering the workforce equipped with skills that are not only relevant but critical to advancing Utah's competitive edge, as evidenced by the high placement rates achieved across each discipline.

The alignment between these programs and Utah's workforce needs is clear. Through partnerships with local businesses and organizations, institutions participating in the initiative are producing graduates who fill specific roles in high-demand areas. For example, the AI and machine learning programs have placed graduates in roles that support data-driven decision-making, while the renewable energy engineering programs are contributing directly to Utah's goals for sustainable energy growth. These placements

ensure that Utah's industries have access to a steady pipeline of talent, reducing the need to recruit from outside the state and supporting local businesses' ability to grow and innovate.

The initiative also makes a significant economic contribution to Utah by producing a workforce that attracts and retains companies within the state. As Utah continues to grow as a hub for technology and innovation, the presence of a well-prepared workforce is essential for both attracting new businesses and supporting the expansion of existing ones. The initiative's emphasis on hands-on training and real-world applications, achieved through internships and project-based learning, ensures that graduates are job-ready and capable of immediate impact in their fields.

Additionally, the initiative has broadened educational equity, reaching underserved and rural communities across Utah. Programs such as Utah State University's Remote Sensing and GIS certificates are helping students from diverse backgrounds access high-quality technical education, enabling them to participate fully in Utah's economic growth. This inclusive approach ensures that the benefits of Utah's growing economy are shared across the state, fostering a diverse workforce that reflects the state's population and contributes to its resilience.

By aligning education with workforce needs, supporting local industries, and promoting equitable access to high-demand fields, the Deep Tech Talent Initiative is playing a pivotal role in shaping Utah's economic future. Its impact extends beyond individual job placements; it strengthens Utah's position as a leader in technology, provides long-term stability to the state's economy, and contributes to a vibrant, sustainable workforce prepared to tackle the challenges and opportunities of tomorrow.

Update on Ongoing Funding for Initial Deep Tech Programs

The initial Deep Tech Talent Initiative programs, launched with funding in 2021, successfully completed their initial grant terms in October 2024. To ensure these foundational programs continue contributing to Utah's workforce development, the Deep Tech Talent Board issued a targeted Request for Proposals (RFP) in early 2024. This invitation-only RFP offered programs nearing the end of their initial funding period an opportunity to submit proposals for ongoing support.

The RFP served as a strategic checkpoint, allowing the Talent Council to assess each program's progress, alignment with the Deep Tech Talent Initiative's goals, and impact on Utah's economy. Programs were evaluated on their demonstrated achievements, continued relevance to workforce demands, and commitment to advancing technical skills in high-demand fields.

Objectives of the Ongoing Funding RFP

The RFP focused on the following key objectives:

- **Sustaining Successful Programs**: To continue funding programs that have shown significant progress and impact in preparing students for careers in deep tech.
- **Alignment with Workforce Needs**: To ensure ongoing support for programs that address Utah's evolving workforce demands in areas such as AI, secure computing, and scientific computing.
- **Data-Driven Evaluation**: To use performance data, industry feedback, and program outcomes as a basis for future funding decisions.

Eligible programs were invited to participate in an information session on May 28, 2024, which provided guidelines on proposal submissions and addressed any applicant queries. Proposals were subsequently reviewed by the Deep Tech Talent Advisory Council, and recommendations were presented to the Utah Board of Higher Education in July 2024. Approved programs will receive ongoing funding, with start dates beginning October 1, 2024, allowing seamless continuity and sustained impact.

Outcome and Future Funding Goals

The review process confirmed that several of the 2021-awarded programs continue to meet the initiative's goals, showing strong results in student outcomes and industry collaboration. By selectively renewing funding for these high-impact programs, the Deep Tech Talent Initiative ensures that resources are effectively utilized, maintaining Utah's competitive edge in technology-driven workforce development.

The continuation of these foundational programs illustrates the success of the Deep Tech Talent Initiative's model and provides a pathway for scaling and replicating these programs across other institutions as future funding allows.

Future Goals and Funding Justification

As Utah continues to grow as a hub for technology and innovation, the Deep Tech Talent Initiative stands as a crucial pillar in preparing a skilled workforce that can support and sustain this progress. Looking ahead, we are committed to expanding the reach and impact of this initiative to ensure that Utah remains competitive in high-demand sectors such as artificial intelligence, cybersecurity, biotechnology, renewable energy, and scientific computing.

To achieve these goals, ongoing funding is essential. With sustained legislative support, we can continue to address the workforce needs of Utah's evolving economy. Additional funding would allow institutions to scale current programs, introduce new certifications, and enhance curriculum offerings to keep pace with rapid advancements in technology. Programs like the I3SC Consortium, for example, have set a benchmark for interdisciplinary education, and with the right resources, we envision replicating similar high-impact models across other institutions. Expanding in fields like AI ethics, quantum computing, and

advanced robotics will not only enhance the depth of the training but also attract top talent to Utah, contributing to the state's overall economic resilience.

Furthermore, ongoing funding would strengthen partnerships with local industries, allowing students more opportunities for internships, applied research, and hands-on projects that directly align with employer needs. These connections between academia and industry create a cycle of growth where students gain relevant skills, companies benefit from a prepared workforce, and Utah's economy continues to thrive.

This initiative has already demonstrated a strong return on investment by supporting thousands of students, fostering significant job placements, and building a workforce that is driving Utah's economic future. By continuing to invest in these programs, Utah not only supports the immediate educational needs of its residents but also ensures long-term stability and competitiveness in a global market. Together, we can keep advancing Utah's position as a national leader in workforce development, fostering a sustainable and prosperous future for our state.

Conclusion

The Deep Tech Talent Initiative has made substantial strides in equipping Utah's workforce with critical skills in high-demand fields, addressing the needs of both emerging industries and established sectors across the state. Over the past year, this initiative has demonstrated its impact through strong enrollment numbers, successful job placements, and the development of innovative programs that are not only meeting today's workforce demands but also preparing Utah for future advancements in technology and life sciences. By investing in these programs, Utah is solidifying its position as a leader in workforce development, offering students cutting-edge education while directly supporting the state's economic growth and competitive standing in high-tech industries.

We extend our deepest gratitude to the Utah State Legislature for their foresight and support in funding this initiative. Your commitment to building a skilled workforce has empowered institutions across Utah to implement programs that are making a measurable difference. We thank you for recognizing the critical importance of this investment and for your continued support as these programs evolve and expand.

Our appreciation also extends to the industry partners whose collaboration and input have been invaluable in shaping programs that align with industry standards and expectations. By working alongside our institutions, you have not only enriched the educational experience but also helped create pathways for students to step directly into impactful careers, strengthening both our local workforce and the broader economy.

Lastly, we would like to recognize the tireless efforts of the institutions, faculty, staff, and students who have embraced these initiatives. Your dedication, innovation, and passion are the foundation of this program's success, and your contributions ensure that these programs continue to grow, adapt, and thrive. Together, we are building a resilient, highly skilled workforce that will support Utah's growth and prosperity for years to come.