DPI
DISCOVERY PARTNERS INSTITUTE

ANNUAL REPORT 2024

Growing impact
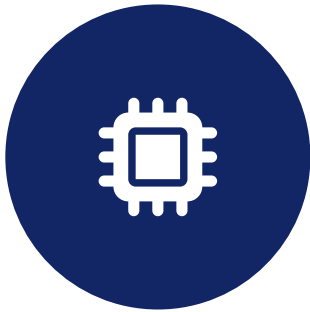
FROM THE INTERIM EXECUTIVE DIRECTOR

A new focus on future of computing

DPI remains committed to our founding purpose: to help grow the economy of Illinois

When Discovery Partners Institute was first conceived in 2017, computers and computing were already thoroughly embedded in many aspects of daily life. Since then, computing and data science — now in high demand among employers and college majors —have become even more integral tools to address challenges in health care, food production, manufacturing, climate science, and many other areas.

DPI's nimble structure in the University of Illinois System and expertise in computing, technology, and data science gives us the unique ability to deploy expertise in these areas from across the three universities to address the most pressing questions facing our planet. We have also gained worldwide recognition in academic circles — 12 top international institutions are now formal DPI partners, making our Chicago headquarters their home away from home and an entry point for cross-collaboration.

In just a few short years, DPI has developed actionable research with an impact on society. Most notably our ongoing collaboration with the Illinois Department of Public Health on monitoring wastewater for diseases and providing robust data to inform policy.

Despite the massive changes in the world since 2020, DPI has continued to run full steam ahead. DPI has engaged public and private stakeholders at all levels. For example, in FY24 we:

- Established two new research centers in FY24: the **Global Center for Clean Energy and Equitable Transportation Solutions (CLEETS)** and the **Cannabis Research Institute**.

- Introduced two new programs as part of the Pritzker Tech Talent Labs: CS Starter
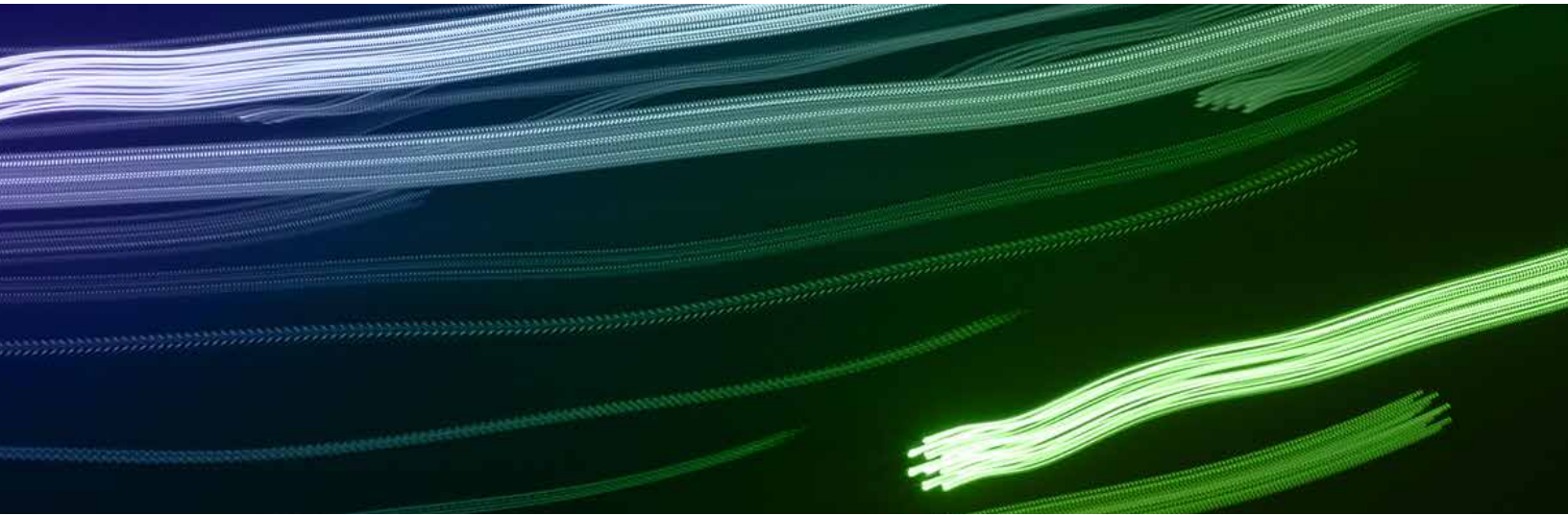
Academy, a year-round program designed for City College students to support pathways into computer science and tech fields, and the Summer Tech Internships, a six-week micro-internship program pairing early college students with Chicago tech companies, nonprofits, and internal DPI projects.

- Reached faculty across the U of I System through our business building program. DPI was involved in the establishment of three new companies springing from university research innovations.

- Informed by IWERC's insights, the state renewed funding for its teacher vacancy grant pilot.

- Shaped state education policy discussions through IWERC. In addition to ongoing guidance on teacher vacancies, kindergarten, learning renewal, and college decision-making, IWERC examined computer science education in both K–12 schools and higher education.

You'll read about these developments and more in this report.

As the research and economic potential of computing technologies grows, so does the need for a tech-equipped workforce, research both aided by and contributing to technology's full capabilities, and businesses poised to harness that growth.

DPI aims to enhance and accelerate its impact role in Illinois' success in all those areas as it expands its efforts to include state initiatives like quantum computing. We look forward to continuing collaborations that will help our state thrive.

Deba Dutta
Interim Executive Director
Discovery Partners Institute

PRITZKER TECH TALENT LABS

Cultivating a more inclusive tech workforce

The Pritzker Tech Talent Labs (PTTL) drives equitable economic growth in Illinois by cultivating a more inclusive tech workforce equipped with in-demand computing skills. PTTL takes a systemic approach to developing promising and diverse tech talent with a suite of connected programs across that reaches middle, high school, community college, and four-year college students; K-12 teachers; and adult learners with non-traditional backgrounds in tech.

Our ambitions are to significantly increase the numbers of Black, Latinx, first generation and women pursuing and completing degrees and certificates in computer science, data science, and related fields of study, as well as to support more workers from diverse backgrounds who will thrive in high-growth jobs in Chicago's tech ecosystem.

Highlights include Chicago Public Schools CS field trip workshops — called **ChiTech Discovery Days** — that brought 400 high school students into DPI to build interest in computing and tech pathways and bolster connections to Chicago's tech community.

DPI also launched the **CS Starter Academy**, a year-round program designed for City College students to support pathways into computer science and tech fields, with funding provided by Google.

Expanding its college-student programming, DPI launched the **Summer Tech Internship**s in the summer of 2024. For six weeks, first- and second-year undergraduate interns completed a series of micro-internship projects pairing them with Chicago tech companies, nonprofits, and internal DPI projects.

In May, we completed the fifth cohort of the Tech Apprenticeship program, now called the **Tech Talent Accelerator**, which won Chicago's "Employer Choice" Award and

1,400

Rough number of participants reached in FY2024 by PTTL programs

PRITZKER TECH TALENT LABS
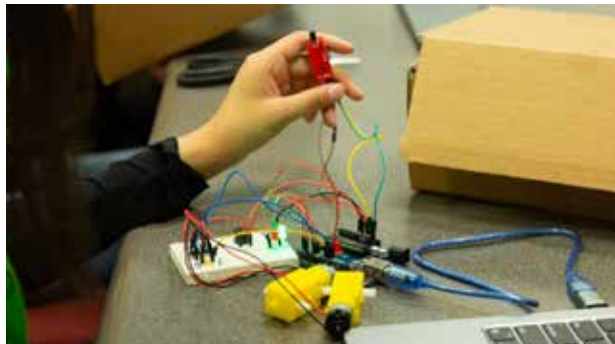
Digital Scholars

Teacher Training Summer Intensives

Digital Bridge

Tech Talent Accelerator

$500,000 to fund roles for our trainees as part of the Good Jobs Challenge. Approximately two dozen trainees completed the 12-week course in software coding and professional development, setting themselves up for lucrative careers in tech. Corporate partners include SAP, John Deere, Oak Street Health, and Zebra Technologies

2024 Summer Programs:

In summer 2024 DPI served more than 425 individuals across six programs. The programs included:

- **Digital Bridge,** a summer workshop series designed to immerse community college students in the tech world.
- **Teacher Training Summer Intensives** helped K-12 teachers understand content, best practices, and pedagogy while working alongside students. Content areas included generative AI, iOS mobile app development (Swift), data science, and CS Foundations.
- **Digital Scholars,** an intensive, five-week pre-college summer program run in partnership with UIUC LAS and UIUC Grainger, aims to build a deeper and more diverse pool of students pursuing computing and tech-related fields in Illinois.

110

Number of PTTL program participants who attended college in the fall of 2024, the majority majoring in computing and tech-related fields.
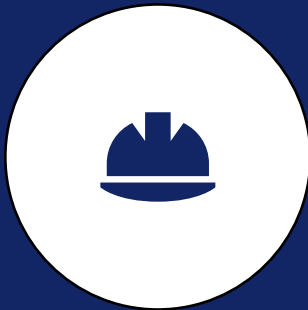
BUSINESS BUILDING

Eye on deep-tech

A core objective of the Ventures Unit is to provide deep-tech-focused services to start-ups and mid-sized companies looking to grow. The Unit also aims to support university technology transfer and commercialization.

FY2024 milestones

250
Approximate number of faculty throughout the U of I System reached by the business building team.

100+
Number of technology invention disclosures reviewed.

8
Number of companies assisted with pitches and funding proposals.

3
Number of new companies established, springing from university research innovations

10
Total number of companies formed since the inception of DPI — **seven in life sciences** and **two in engineering**, both key areas of expertise in the U of I System.

APPLIED RESEARCH & DEVELOPMENT
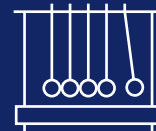
Groundbreaking science and growing global partnerships

Grants enabled DPI to set up two new research centers in FY24.

The first, a $5 million award from the National Science Foundation (NSF), helped to establish the **Global Center for Clean Energy and Equitable Transportation Solutions** (CLEETS). The NSF grant partnered with a grant by the UK Research and Innovation Engineering (UKRI) and Physical Sciences Council for nearly £5 million to the University of Birmingham in the United Kingdom.

The NSF-UKRI partnership for the CLEETS Global Center aims to accelerate equitable, use-inspired decarbonized road transportation pathways — meaning, fair and useful alternatives to current high-carbon options — by engaging government, the private sector, and communities in collective research, education, and problem-solving for transitions to clean energy. The insights gleaned from this work will be designed to inform local and international policy decision-making and contribute directly to carbon neutrality goals.

Ashish Sharma, who serves as a principal investigator for CLEETS and is also DPI's climate and urban sustainability lead, earned "40 Under 40" accolades from Crain's Chicago Business in FY24, and moderated a panel at the UN General Assembly Science Summit this fall.

45

Number of science teams receiving seed grants from DPI.

The second is a $7 million grant awarded over three years from the Illinois Department of Human Services to fund the new **Cannabis Research Institute** at DPI. This initiative is aimed at bringing unbiased academic research regarding cannabis to everyone, from policymakers to purveyors, and build bridges from agriculture to medical therapeutics. Governor JB Pritzker provided opening remarks at the launch event this fall that included panelists [insert list, include link]. CRI Director Reggie Gaudino was also placed in the Crain's Notable Black Leaders of 2024.

APPLIED RESEARCH & DEVELOPMENT

Ashish Sharma, center, at the CLEETS Annual Workshop in the U.K.

Reggie Gaudino, left, at a panel introducing the Cannabis Research Institute.

In addition, the State of Illinois awarded a contract of up to $4.5 million to expand the wastewater analysis work that DPI does. This is the work that earned a Chicago Innovation Award in 2022 and an invitation to a NASDAQ Bell Ceremony in 2023.

Quick numbers:

- 37 active or recently concluded grants across our science teams since DPI's inception in 2020
- Totaling more than $46.3 million for DPI, specifically
- More than $81 million for multi-institutional science teams involving DPI
- Contracts totaling nearly $30 million

To fuel innovation, DPI provides seed grands to promising research and development proposals from qualified science teams. To date, 45 science teams have received a total of $4 million in seed grants, including 13 micro-grants awarded this year to support international research initiatives between the U of I System and Cardiff University in Wales.

Research topics range from electric vehicle charging to rethinking the environmental humanities in a global perspective. This new Illinois-Cardiff program complements other previously established international exchanges, such the National University of Singapore's Overseas College, which brings students to Chicago for yearlong internships with companies in Chicago, and DESY, a national accelerator lab in Germany where we can pursue joint technology commercialization by bringing new partners from Germany to DPI and vice versa.

ILLINOIS WORKFORCE AND EDUCATION RESEARCH COLLABORATIVE

Research that drives change

Informed by IWERC's insights, the state renewed funding for its $45 million teacher vacancy grant pilot.

To further shape policy discussions, the Illinois House workgroup on teacher shortages invited IWERC and its partners at the Latino Policy Forum to speak on the bilingual teacher shortage in Illinois. In addition, IWERC researchers advised the Illinois State Board of Education on the Kindergarten Individual Development Survey, the P-20 Council on learning renewal, and the governor's office on college decision-making.

In a series of reports on computer science education in Illinois, IWERC examined both K–12 schools and higher education. More than 30 Illinois colleges participated in the college study focused on CS majors, receiving tailored reports to help them improve persistence and equity within their programs.

APPLIED RESEARCH & DEVELOPMENT

This year's batch of grantees was also notable for DPI's first Arts and Humanities seed award, for a theater project at Hull-House.

Industry partnerships continued to grow in DPI R&D, with partnership agreements signed between Intel to work on federated learning solutions for the insurance industry.

R&D also hosted its first internship programs this summer, with 14 students in the Summer internship Program for Applied Research and Knowledge Sharing (SPARKS) program for high school students and seven graduate students. Both groups worked, sometimes together, on projects with DPI faculty including remote monitoring of algae blooms in small lakes and an analysis of online privacy policies.

Stories of DPI's impact in 2024

News /

Illinois climate researchers develop methodology to predict temperatures at street scale

MAR 12, 2024 • PRESS RELEASES

Urban climate resilience bolstered with smart use of data and sensor technology

CHICAGO – In a **new study** published in the AGU Journal of Advances in Modeling Earth Systems, scientists at the **Discovery Partners Institute**, part of the University of Illinois System, have developed a new methodology to predict temperatures at street scales. Cities worldwide grapple to counteract heat-related issues, as their strategies often lack scientific rigor and their efforts are constrained by resource availability. With accurate and prompt fine-scale temperature predictions in urban areas, communities can better prepare for the effects of climate change.

According to DPI researchers, the methodology developed in this study holds immense potential

News /

A record summer for tech training programs at Discovery Partners Institute

JUN 26, 2024 • PRESS RELEASES

DPI will more than double its summer reach with learners from middle school to mid-career to build computing skills and make meaningful connections with Chicago's tech community

CHICAGO (June 26, 2024) — The Discovery Partners Institute, part of the University of Illinois System, has significantly expanded the reach of its programs in the Pritzker Tech Talent Labs, which focus on driving more equity into the region's tech workforce.

DPI will more than double its summer reach to more than 425 participants across six different

Real Impact: Rigorous program sparks career progress without debt or doubt

JUN 26, 2024 9:30 AM

Photograph courtesy of John Deere

View More Images...

Real Impact stories spotlight the real difference people, programs and partnerships—across the system—make on the state's economic, social and cultural well-being. For more, meet *maker Jonathan Amorel.*

More than halfway through her apprenticeship at *John Deere*, Alejandra Landa's nerves had subsided, but her excitement hadn't.

"I don't think I could have asked for a better team," Landa said of the supplier relationship management crew. "They

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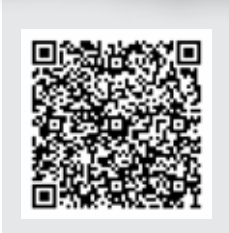
DISCOVERY PARTNERS INSTITUTE

Keep in touch!

There are many ways to engage with DPI and our mission to train tech talent, create research that changes the world, and build businesses to drive equitable economic development. It starts with subscribing to our newsletter to stay informed, following us on LinkedIn, and fueling our work with your gift. You can do all of this and more right here.
https://dpi.uillinois.edu/engage/

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