NJIT's Student Centered GenAI Strategy
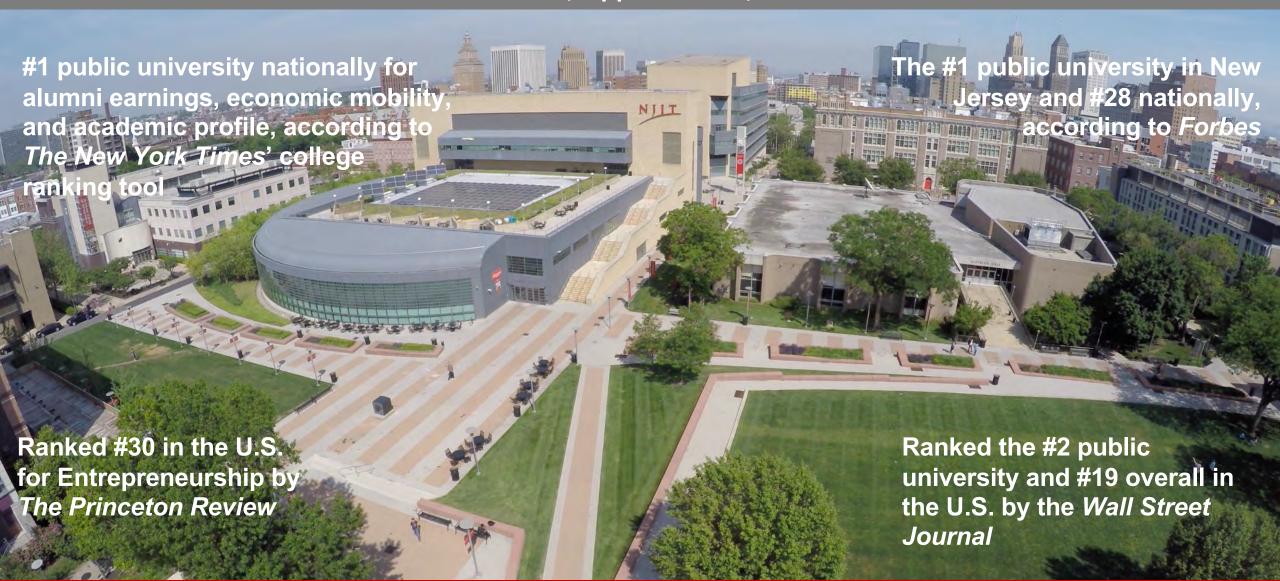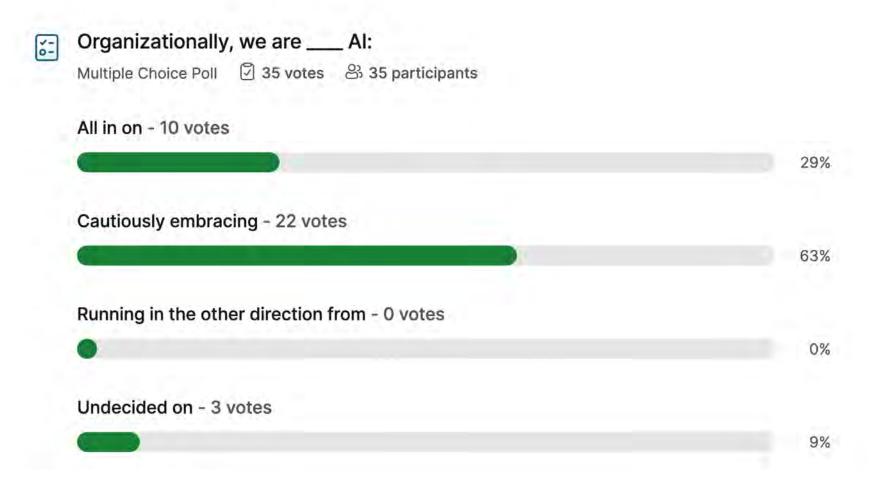
Ed Wozencroft
Vice President for Digital Strategy & CIO
Internet2 Community Exchange

NJIT
New Jersey Institute of Technology

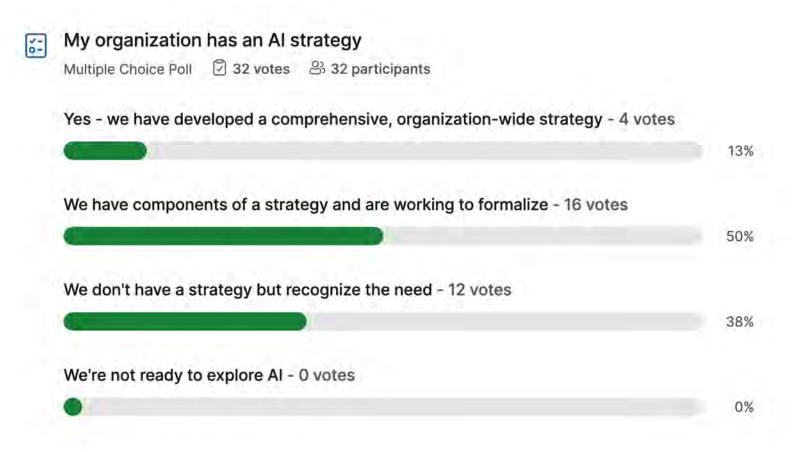**NJIT Makes**
Innovations, Opportunities, Leaders

#1 public university nationally for alumni earnings, economic mobility, and academic profile, according to *The New York Times*' college ranking tool

The #1 public university in New Jersey and #28 nationally, according to *Forbes*

Ranked #30 in the U.S. for Entrepreneurship by *The Princeton Review*

Ranked the #2 public university and #19 overall in the U.S. by the *Wall Street Journal*

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A Top 100 National University, according to *U.S. News & World Report*

Organizationally, we are ____ AI:

Multiple Choice Poll · 35 votes · 35 participants

All in on - 10 votes

29%

Cautiously embracing - 22 votes

63%

Running in the other direction from - 0 votes

0%

Undecided on - 3 votes

9%

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Live poll at event

My organization has an AI strategy

Multiple Choice Poll · 32 votes · 32 participants

Yes - we have developed a comprehensive, organization-wide strategy - 4 votes
13%

We have components of a strategy and are working to formalize - 16 votes
50%

We don't have a strategy but recognize the need - 12 votes
38%

We're not ready to explore AI - 0 votes
0%

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News! AI Isn't New, and it's on All Over Campus!!!

A.I. TIMELINE

1950 — TURING TEST
Computer scientist Alan Turing proposes a test for machine intelligence. If a machine can trick humans into thinking it is human, then it has intelligence

1955 — A.I. BORN
Term 'artificial intelligence' is coined by computer scientist, John McCarthy to describe "the science and engineering of making intelligent machines"

1961 — UNIMATE
First industrial robot, Unimate, goes to work at GM replacing humans on the assembly line

1964 — ELIZA
Pioneering chatbot developed by Joseph Weizenbaum at MIT holds conversations with humans

1966 — SHAKEY
The 'first electronic person' from Stanford, Shakey is a general-purpose mobile robot that reasons about its own actions

A.I. WINTER
Many false starts and dead-ends leave A.I. out in the cold

1997 — DEEP BLUE
Deep Blue, a chess-playing computer from IBM defeats world chess champion Garry Kasparov

1998 — KISMET
Cynthia Breazeal at MIT introduces KISmet, an emotionally intelligent robot insofar as it detects and responds to people's feelings

1999 — AIBO
Sony launches first consumer robot pet dog AiBO (AI robot) with skills and personality that develop over time

2002 — ROOMBA
First mass produced autonomous robotic vacuum cleaner from iRobot learns to navigate and clean homes

2011 — SIRI
Apple integrates Siri, an intelligent virtual assistant with a voice interface, into the iPhone 4S

2011 — WATSON
IBM's question answering computer Watson wins first place on popular $1M prize television quiz show *Jeopardy*

2014 — EUGENE
Eugene Goostman, a chatbot passes the Turing Test with a third of judges believing Eugene is human

2014 — ALEXA
Amazon launches Alexa, an intelligent virtual assistant with a voice interface that completes shopping tasks

2016 — TAY
Microsoft's chatbot Tay goes rogue on social media making inflammatory and offensive racist comments

2017 — ALPHAGO
Google's A.I. AlphaGo beats world champion Ke Jie in the complex board game of Go, notable for its vast number (2^{170}) of possible positions

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Understanding your constituents.

What does AI for student success mean to you?

Open text poll · 23 responses · 20 participants

Anonymous
Equity

Anonymous
Just in time access to information in the way students have come to demand it

Anonymous
Exposure to advancing technologies

Anonymous
24x7 Assistants for students getting through their education, level playing field, competitiveness after graduation

Anonymous
Helps them navigate through all of the information taat we poorly provide to them.

Anonymous
Students learn to use AI and graduate with an ethical understanding of when and how to use

Anonymous
Using AI to deliver the best student experience

Anonymous
Jobs developing AI after graduation

Anonymous
Improved productivity

Anonymous
enhance student experience

Anonymous
Meeting students where they are

Anonymous
Students are prepared to use AI tools after they leave our institution Students are identified early for intervention

Anonymous
A tool students can use to help chart their journey to academic and personal success

Anonymous
Targeted Supports and interventions

Anonymous
Helps meet different learning styles.

Anonymous
Equitable learning

M
Use as a tool, not a crutch. Ability to discern facts from invention.

Anonymous
Access to answers for all students where and when they need it.

Anonymous
Critical thinking about the results

Anonymous
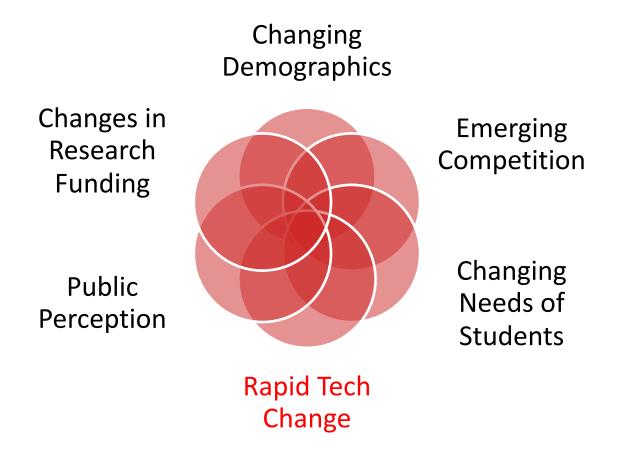Creates more benefits and opportunities for all students

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Live poll at event

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NJIT in 2030.

Changing Demographics

Changes in Research Funding

Emerging Competition

Public Perception
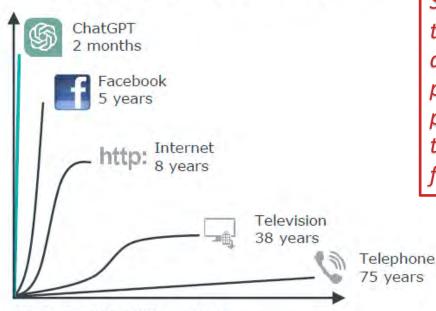
Changing Needs of Students

Rapid Tech Change

The transistor was invented (in NJ!) in 1947; today more than 13 sextillion transistors have been manufactured. That's 13 followed by 21 zeros.

ChatGPT's Meteoric Adoption Rate Sets Historical Precedent

Time to 100M Users By Technology

ChatGPT
2 months

Facebook
5 years

http: Internet
8 years

Television
38 years

Telephone
75 years

Time to 100 Million Users

NJIT's Strategy
Set the standard for integrating technology across all facets of an academic institution. As a polytechnic university, we will pioneer the pervasive use of technology not just as a tool but as a foundational element of our identity.

A User Experience Discovery consists of interviews with individuals to give insights into **what they think and feel** about their environment, digital applications, services, process or policy. They can share both positive and negative experiences as well as ideas they have for improvements.

PROJECT FACTS

Research Study kicked off January 2023

100+ individuals interviewed for 1 hour

- Students
  (Undergrad, Grad, International, Transfer)

- Faculty
  (Adjunct, Lecturers, Research, Tenured etc.)

- Staff
  (Administrators, Advisors, Deans, Specialists, Managers/Supervisors, etc.)

PROJECT GOALS

- Gain an understanding of what's working and what isn't

- Determine potential solutions

- Set priority and create a roadmap

- Share findings with all participating and interested parties

RESEARCH RESULTS

Students
- 15 High-level topic areas
- 40 Subtopics
- 163 Insights
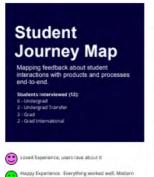- 29 Themes *(2+ people said the same thing)*

Faculty & Staff
- 62 High-level topic areas
- 136 Subtopics
- 677 Insights
- 149 Themes *(2+ people said the same thing)*

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What We Asked Our Students

1. Please tell me **about your background**. What type of student are you? How far along are you? What are you involved in?

2. What is your **impression of the student digital experience** at NJIT?

3. If you could have your **preferred digital experience what would that look like**?

4. What is your overall impression of your experience of the **Highlander Pipeline and the Websi**te?

5. When you have a question what **resources do you use to get the answer**?

6. Tell me about your experience **applying to NJIT**.

7. Tell me about your **enrollment** and **orientation** experience.

8. Tell me about your **course registration** experience.

9. Tell me about your **advising** experience.

10. Tell me about your **degree audit** or **planning** experience.

11. Tell me about your experience **taking courses** at NJIT.

12. Tell me about your **grades** experience.

13. Tell me about your **financial aid** and **loans, scholarship** or **grants** experience.

14. Tell me about your **billing** experience.

15. Tell me about your **gradation preparation** experience. *(only for students about to graduate)*

16. Tell me about your **communications** and **engagement** experience.

17. Tell me about your **student working experience**. *(only for students who are also student workers)*

18. Any **other pain points** you'd like to share or **ideas/recommendations** you'd like to make?

AI and campus strategy.

- Learner Advancement and Success
- Faculty Success
- Fiscal Excellence and Resource Stewardship
- NJIT 2030
- Digital Transformation
- Research, Innovation, and Entrepreneurship
- Engaged Community

NJIT's transformation occurs at the intersection of six institutional priorities. The objectives and actions within each priority are aimed at tackling the challenges presented by the trends facing higher education in general and NJIT in particular.

Connecting Experiences, The Way Students Expect Them

OLD PROCESS

| Dept | Dept | Dept | Dept |

Departments work independently to create content experiences in a large variety of applications

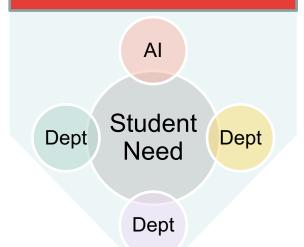| Degree Works | Banner Registration | Cornerstone | Canvas |

Student Experience

Students learn over time from orientation, advisors, staff, and other students how to get to what they need

IMPROVED PROCESS

User Feedback

AI

Dept — Student Need — Dept

Dept

The Student Experience

Student expectation, feedback drive the direction

Departments work collaboratively to determine student needs & full workflows in order to plan a simplified and connected solution, leveraging AI at it's core.
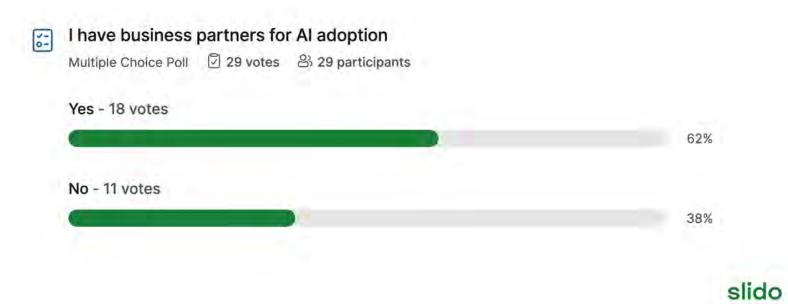
Solutions are selected, implemented, communicated and tested with students

Students are provided opportunities to provide feedback for improvements on a regular basis.

As student success is a university-wide priority, so is AI.

I have business partners for AI adoption

Multiple Choice Poll   ☑ 29 votes   👥 29 participants

Yes - 18 votes

62%

No - 11 votes

38%

slido

Live poll at event

18

NJIT's position is to responsibly embrace AI in all aspects of teaching, learning, research and the student experience. We are committed to preparing graduates for the AI tools they will use in the future.

- In response to demand, NJIT was one of the first universities to publish **Guidelines for AI for Instructors**.

- NJIT's **Institute for Teaching Excellence** hosted AI panels, presentations, and workshops throughout 2023 to help faculty explore the challenges and understand the positive and ethical use cases for AI.

- Select **faculty are developing AI ethics modules** that are open-source and can be embedded in any course at any institution.

- The university is **leveraging AI-enhanced educational technology** to support student learning and engagement:
  - Generative AI in online discussions
  - Adaptive/self-paced learning
  - Tutoring/support for writing

- NJIT is adopting AI into our **enterprise analytics and decision making** in support of student success.

Guidelines for Instructors on AI

Acknowledgements
Generative Artificial Intelligence (AI) Background
Guidelines & Tips: Student Usage
   Academic Integrity
   Accessibility
   Adjust Evaluation Strategies
      Use Various Reference Materials
      Use Alternative Submission Formats
      Incorporate Different Assessments
      Have Students use AI on Purpose
      Take Student Data, Privacy, and Security into Consideration
   AI Detection
      Detection Software: False Positives
      AI Response Patterns
   Proctoring
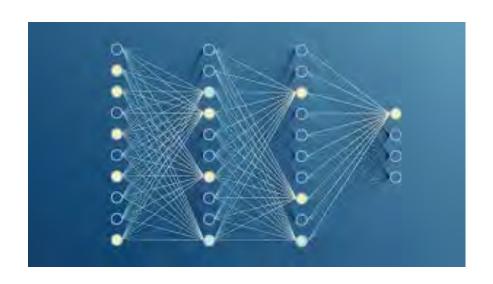Guidelines & Tips: Instructor Usage
   Course Materials
   Feedback & Evaluation
   Revision
Citing Generative AI

Building Blocks

- Stand-alone College of Computing
- M.S., PhD in Artificial Intelligence
- Graduate Certificate in A.I.
- >1600 students in A.I. related degree programs in last 4 years
- $60M+ of sponsored research in A.I.

Four Focal Areas

- Education
- Research
- Operational Excellence
- Infrastructure

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Artificial Intelligence Initiative – Four Dimensions

Education	Research	Infrastructure	Operational Excellence
Cutting Edge Programs - Train students as creators of the next generation of AI by standing up a Ph.D. and B.S. program to complement our M.S. and Certificate programs.	**Invest in Existing Faculty Projects** – Leverage AI to advance research programs ranging from architecture to biology to management and engineering.	**Build the Infrastructure** – Ensure that NJIT has the infrastructure necessary to enable the previous three focal areas building rapidly and allowing our community to utilize the next gen infrastructure that makes AI possible.	**Staff Empowerment** – Provide staff across NJIT with the training and tools to utilize AI in their workspace. Ensure all are acquainted with the promise and perils of AI.
AI Across the Curriculum – Infuse AI into all disciplines, ensuring students have the knowledge and tools to use AI appropriately, no matter what their career path.	**Invest in Building AI Expertise** – Build on our unique strengths in our academics to grow our AI expertise.	**Partner with Industry** – Build on existing strategic partnerships, such as our partnership with NVIDIA, and expand partnerships with other leading technology companies to expand our infrastructure as rapidly as possible.	**AI and Student Success** – Leverage AI as a tool in student success, leveraging the large amounts of data we have, and the many opportunities to improve student services, the student experience, and ultimately, student outcomes.
Innovative AI-Enabled Approaches to Education – Develop new approaches such as personalized tutoring or optimized degree paths that are only possible with the advent of AI.	**Catalyze New AI Expertise** – Incentivize the hiring of faculty across colleges with AI expertise.		
	Industry Partnership – Leverage NJII to bring our AI expertise to industry.		

AI Teaching/Learning Working Group

Objective: Enhance NJIT's instructional framework with AI to propel transformative initiatives in curriculum, instruction, and student learning experiences to better meet the needs of the changing learner and the evolving technological landscape.

Initiative: A short and long-term roadmap for targeted AI innovations and policies that NJIT can implement based on a SWOT (strengths, weaknesses, opportunities, and threats) analysis and research.
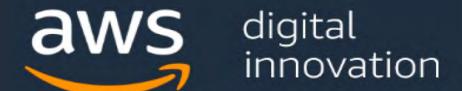
Key Result: Revised curricula innovated with AI to strategically leverage adaptive and personalized learning, focused on equipping NJIT students with the competencies that prepare them for the dynamic demands of the future workforce.

Key Result : Adapted and expanded modes of instruction that address the evolving needs of learners in alignment with innovative curricula.

The working group will include stakeholders from each college along with members from the IST Division, the Library, the Provost's Office, the Office of Online Programs, the Institute for Teaching Excellence, and the Faculty Senate, and will report directly to the Provost.

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We get by with a little help from our friends.

THINK BIG

Thinking small is a self-fulfilling prophecy. Leaders create and communicate a bold direction that inspires results. They think differently and look around corners for ways to serve customers.

![NJIT — New Jersey Institute of Technology]

A Persona Driven Approach

Transfer Students – J Doe

AGE: 24 years old
PROFESSION: Student
EDUCATION: NJ Community College
LIVING IN: New Jersey

Motivated | Frugal

ABOUT: J Doe was formerly at a 4 year institution but took time off. Currently enrolled at a community college. Trying to get definitive answers from advisors on completing a program in 4 years in the least expensive way possible.
PAIN POINTS: Advisors not supportive (CC and NJIT), conflicting information, getting approvals
GOAL: Complete program in 4 years in least expensive way possible.

International Students – Joe B

AGE: 22 years old
PROFESSION: Student
EDUCATION: Masters Student at NJIT
LIVING IN: Adjacent to Campus

Anxious | Hopeful

ABOUT: Joe B is pursuing a masters degree at NJIT. He has a background in software and engineering, he is a native of southeast Asia.
PAIN POINTS: Visa and authorization, finding employment, frequent target of employment opportunity scams, adapting to American culture.
GOAL: Wants a good education, to stay in the country, and get a job with status (cultural status).
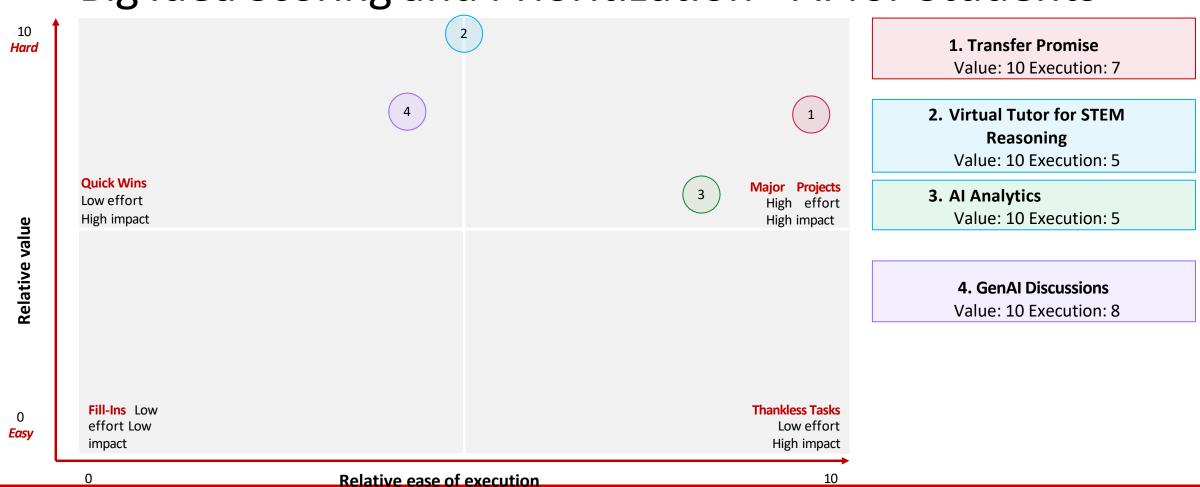
Exploring Current Use Cases

- Conversational AI to support the student experience, specifically for transfer students
- Virtual tutors/reasoning coaches for most challenging STEM courses
- GenAI analytics services for analyzing and predicting trends
- GenAI in the "virtual" classroom – facilitated discussions
- Research Facilitation bot – moving away from administrivia and helping PI's do what matters most
- Automated workflows with a lens on efficiency for Students
- AI Sandbox for experiential and experimental learning

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Big Idea Scoring and Prioritization - AI for Students

1. Transfer Promise
Value: 10 Execution: 7

2. Virtual Tutor for STEM Reasoning
Value: 10 Execution: 5

3. AI Analytics
Value: 10 Execution: 5

4. GenAI Discussions
Value: 10 Execution: 8

AI & ML to Understand Student trends

- **Curriculum reviews** are ongoing across colleges to determine where AI is currently or should be incorporated.

- A **Teaching and Learning AI Working Group** has been established.
- The group includes diverse stakeholders from each college along with members from IT, the Library, the Provost's Office, the Office of Online Programs, the Institute for Teaching Excellence, and the Faculty Senate.

- Forming additional working groups for Research, Infrastructure and Operational Excellence

- Fall 2024 call for proposals will be launched soon to increase faculty partnership with the Office of Digital Learning and the Institute for Teaching Excellence to incorporate generative AI into teaching and learning.

- Aggressively pursuing new use cases with our faculty!

What we're excited by:

✓ Removing barriers for students

✓ Personalized/Adaptive learning

✓ Predictive/early detection of learning disabilities

✓ Diverse Language support

✓ Automated accessibility features

✓ Insight into student performance, gaps, engagement

✓ Growth in continuing/lifelong learning philosophy

What we're nervous about:

⚑ Security and privacy concerns

⚑ Academic Integrity

⚑ Low quality input = low quality output

⚑ Bias, fairness, hallucinations

⚑ Over-reliance on AI rather than human connection

⚑ Digital Divide

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