Management & IS Department Chair's Report, Fall 2019

prepared for the Fall 2019 IT Alliance Meeting

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I would like to take this opportunity to thank...

- It Alliance Members, for your unconditional support.
- Joab Schultheis ITA Chair and Chair-Elect Alan Letterman, for their leadership and continuous support for our CIS and CS Programs and activities.
- Note: Joab and Alan have initiated an ad hoc committee to facilitate better interaction between ITA members and faculty regarding student projects and feedback about the idea of a CS MS program. This committee met twice this summer and fall.
- Gongjun and his CIS and CS students, who worked so hard on the senior projects they presented today.
- My hard-working, dedicated colleagues.

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I would like to take this opportunity to thank...

- Dean Cathy Carey, for her support of our departmental programs and activities.
- Kenny, for organizing an upcoming Southwest Indiana Cyber Conference, Thursday, March 19, 2020, at USI's Griffin Center.
- Srishti and CS faculty, for organizing the upcoming spring, 2020 Hackathon.
- Scott, for participating as a facilitator for the *Indiana Computes* program, which trains educators, k-12, in computer science.
- Gongjun, for leading the effort to develop a CS Master's program.
- Srishti, for her leadership of the ACM Student Chapter and for agreeing to do a project in collaboration with Health Professions that will utilize the RCOB's User Perception, Cognition, and Interaction Lab.

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Faculty Resource News

- **I would like to recognize Dr. Xue Han, our new CS faculty.** He received his Ph.D. from the University of Kentucky.

- **A full-time instructor position in CS** has been filled, beginning in spring, 2020.

- **A full-time instructor position in CIS** has been filled, beginning in spring, 2020.

- **Three full-time CIS tenure-track faculty positions have been secured**. The specific types of expertise sought are data analytics, cyber-security, and the use of smart technologies in agriculture, and other expertise such as web development, database, and systems analysis and design.

- The search has begun. So far, 100 applicants have applied for these positions.

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Other Department News

The retirement of three CIS faculty this year: Dr. Jennifer Williams, Dr. Sharlett Gillard, and Mr. Ernie Nolan.

Two new CIS certificates were implemented this fall, 2019

- Cyber-Security and Data Analytics for Business certificates

- These certificates serve **our students and also are available to non-degree-seeking** individuals. If you have any employees who are interested in earning these certificates, let us know!

- The CIS major and minor and CIS Post-Baccalaureate Certificate were modified to align with Cyber-Security and Data Analytics for Business certificates (for implementation in fall, 2020).

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Newly Modified CIS Major Curriculum
(for implementation in fall, 2020)

- CS 258   Introduction to Object-Oriented Programming using C#
- CIS 276 Introduction to Enterprise Web Development
- CIS 301 ERP/SAP or **CIS 333 – Data Visualization and Story Telling**
- CIS 345 Information Systems Security & Risk Management
- CIS 367 Data Communications
- CIS 375 Systems Analysis and Design
- **CIS 344 Machine Learning** Or CIS346 Cybersecurity Assessment and Network Defense or CIS 376 Programming for Enterprise Web Development OR CS 358 Intermediate Programming using C#
- CIS 377 Database Concepts
- **CIS 366 Data Management for BI and Analytics**
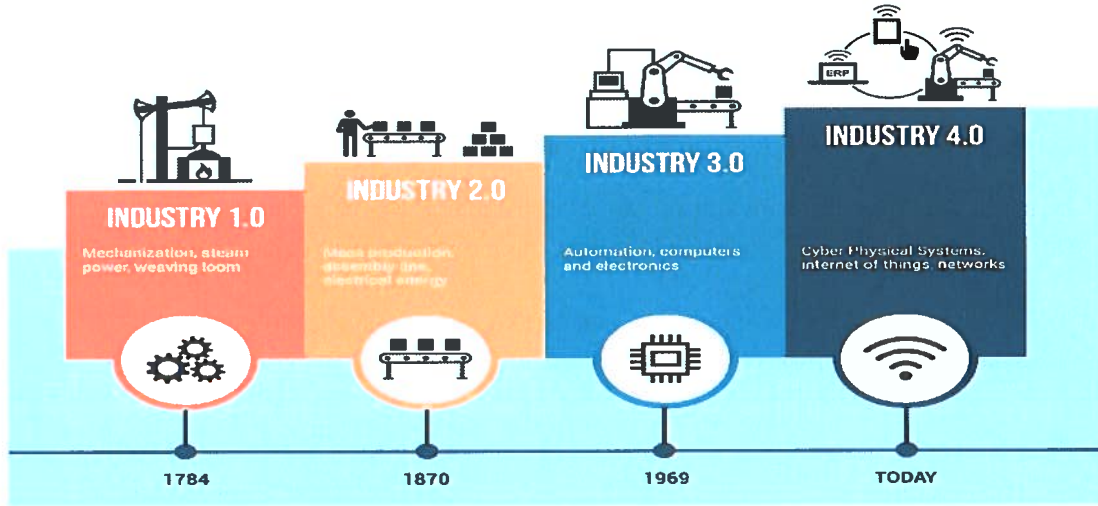- CIS 477 Applied Software Development Project

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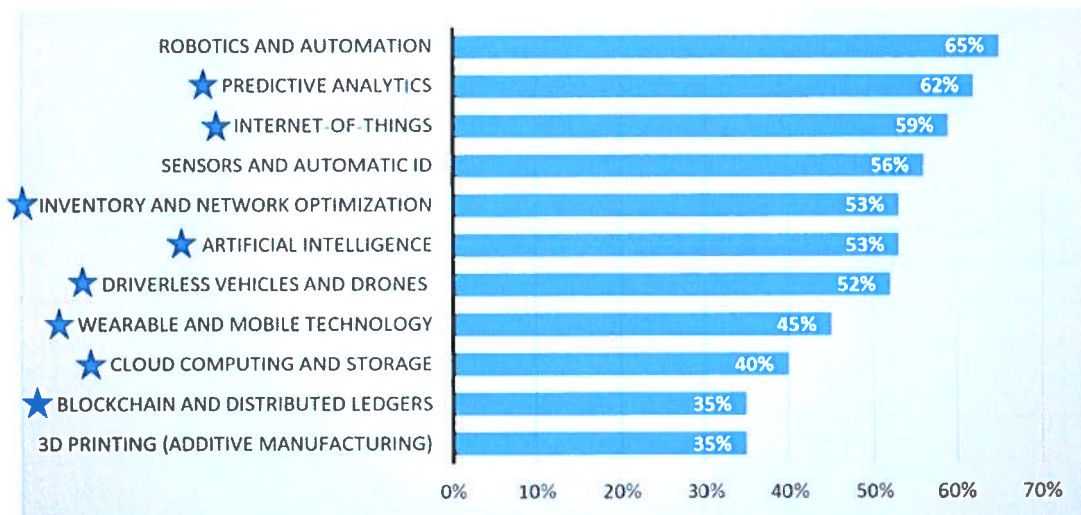
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INDUSTRY 4.0 – "Technological revolution that is blurring the lines between the physical, biological spheres." (Klaus Schwab)
Disruptive technologies are having a profound impact on business, industry, & education

INDUSTRY 1.0
Mechanization, steam power, weaving loom

INDUSTRY 2.0

INDUSTRY 3.0
Automation, computers and electronics

INDUSTRY 4.0
Cyber Physical Systems, internet of things, networks

1784   1870   1969   TODAY

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Examples: Disruptive technologies can disrupt or create competitive advantage
(⭐Some of them are addressed in our CIS/CS courses.)

Technology	Percentage
ROBOTICS AND AUTOMATION	65%
⭐ PREDICTIVE ANALYTICS	62%
⭐ INTERNET-OF-THINGS	59%
SENSORS AND AUTOMATIC ID	56%
⭐ INVENTORY AND NETWORK OPTIMIZATION	53%
⭐ ARTIFICIAL INTELLIGENCE	53%
⭐ DRIVERLESS VEHICLES AND DRONES	52%
⭐ WEARABLE AND MOBILE TECHNOLOGY	45%
⭐ CLOUD COMPUTING AND STORAGE	40%
⭐ BLOCKCHAIN AND DISTRIBUTED LEDGERS	35%
3D PRINTING (ADDITIVE MANUFACTURING)	35%

(Source: MHI & Deloitte, 2018, 5)

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Trends in education & organizational talent development

- Disruptive technologies are forcing business, industrial and educational organizations to integrate these technologies to achieve digital transformation and data-driven decision making.

- Unfortunately, there is a **huge gap in employee technology know-how.**

- **Prediction**: By 2030, the work of approximately 375 million people will be so disrupted by digital technologies that they will have to be retrained/uptrained or seek other types of work.

- **Good news for our students!** The need for technology-trained employees is growing exponentially.

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Industries are seeking short-term training for employees
**(source: "Supply Chain Workforce Training: Addressing the Digital Skills Gap,"
a paper I recently presented at the DSI Conference)**

Potential opportunity for universities!

Collaborations are forming between industries and universities to offer:
- **MOOC** (Massive, Open Online Courses) courses. MOOCs offer short courses, can be tailored to focus on a particular skill or technology. Offer credentials.
- **MicroMasters programs**
  - Online, shorter in length than traditional Master's programs
  - Career, outcome-focused, recognized by top companies, affordable, flexible, self-paced, offer credentials.

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Our CIS/CS Programs are addressing some short-term, competency-focused training needs

- Cyber-Security and Data Analytics for Business certificates--offered to non-degree-seeking individuals. (4 courses)
- Post-Baccalaureate certificate in CIS (6 courses)
- Enterprise Web Development Minor.
- *IndianaComputes* program for k-12 educators
- Potential certificates in CS—such as AI, software development.
- Discussions about CIS and CS MicroMasters programs as part of our MBA Program concentrations.

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