

# Graduate Programs at SICE

Esfan Haghverdi  
Executive Associate Dean for Academic Affairs

School of Informatics, Computing, and Engineering  
Indiana University Bloomington

April 12, 2019





# Bloomington, Indiana

- Southwest of Indianapolis, 7th largest city in the state, established in 1818 “a haven of bloom”
- Population: 85,071 (2017)
- Academy Award-winning 1979 movie *Breaking Away*, featuring a reenactment of Indiana University's annual Little 500 bicycle race
- Lakes and national parks
- Highly multicultural
- Art and music festivals
- International cuisine

- 2017 Best Cities for Entrepreneurs: #24 out of 50
- Vibrant and growing ecosystem of local start-ups
- #31 in the “Top 100 Best Places to Live” in 2018 by Livability.com
- Over 13 major festivals each year
- 12% below the national average for the cost of living
- Tech sector employment has grown by over 80%
- #2 in the nation among 124 small metros for high tech GDP concentration



# Indiana University

- Established in 1820
- IU Population 43,710 (2017)
- 9 Nobel laureates, 17 Rhodes Scholars, 17 Marshall Scholars, and 5 MacArthur Fellows.
- 6 Academy Awards, 49 Grammy Awards, 32 Emmy Awards, 20 Pulitzer Prizes, 4 Tony Awards, and 104 Olympic medals (55 gold, 17 silver, and 32 bronze).

## Notable Alumni

- James Watson, one of the co-discoverers of the structure of DNA
- Jimmy Wales, the co-founder of Wikipedia
- Robert Gates, the 22nd United States Secretary of Defense
- Dag Kittlaus, CEO and co-founder of Siri and Viv
- Suzanne Collins, award-winning author of The Hunger Games series
- Hoagy Carmichael, composer and songwriter
- John Chambers, executive chairman and former CEO of Cisco Systems
- Mark Cuban, billionaire investor





# SICE History

- **2000**, School of Informatics
- **2005**, School of Informatics  
(CS joined the school)
- **2009**, School of Informatics and Computing
- **2013**, School of Informatics and Computing  
(SLIS joined the school)
- **2015**, Intelligent Systems Engineering Department and Program were approved
- **2017**, School of Informatics, Computing, and Engineering
- SICE Population (2018): 3100 (Total), 1962 (Undergraduate), 772 (MSc), 329 (PhD)

# SICE Structure

- Department of Computer Science
- Department of Informatics
- Department of Information and Library Science  
(graduate program)
- Department of Intelligent Systems Engineering
- Data Science Program  
(graduate program)

- Graduate Degrees
  - M.S. in Computer Science
  - M.S. in Bioinformatics
  - M.S. in Secure Computing
  - Dual Degree in Secure Computing and the Russian and East European Studies
  - M.S. in Cybersecurity Risk Management (jointly with Maurer and Kelley)
  - Ph.D. in Computer Science
  - Ph.D. in Cognitive Science and Computer Science  
(A dual major in cognitive science and computer science)
  - Ph.D. Minor in Computer Science

- Graduate Degrees

- M.S. in Informatics

- (Complex systems, proactive health informatics, human-computer interaction design, music informatics, intelligent and interactive systems, computing, culture and society, and virtual heritage)

- M.S. in Human-Computer Interaction Design

- Ph.D. in Informatics

- (Multiple tracks)

- Ph.D. Minors in Informatics

- (Bioinformatics, complex networks and systems, data science, human-computer interaction, informatics, music informatics, security informatics, and social informatics)

# Information and Library Science

- Master of Information Science (M.I.S.)
- Accelerated Master's Program in Information Science (B.S. or B.A. and a Master of Information Science)
- Master of Library Science (M.L.S.)
- Accelerated Master's Program in Library Science (B.S. or B.A. and a Master of Library Science)
- Ph.D. in Information Science
- Ph.D. minors: ILS, Information Science
- Graduate Certificate in Information Architecture

- Graduate Degrees
  - Master of Science in Intelligent Systems Engineering
  - PhD in Intelligent Systems Engineering  
(Tracks : Bioengineering, Computer Engineering, Cyber-physical Systems, Environmental Engineering, Molecular and Nanoscale Engineering, Neuroengineering)

- Data Science GR CRT
- Data Science MS
- Data Science MS Online



# Graduate Certificates

- Data Science GR CRT
- Cybersecurity GR CRT
- Information Architecture GR CRT

# Ranked List by Enrollment

- Data Science Online, 294
- Data Science MS, 145
- Computer Science PhD, 136
- Computer Science MS, 126
- Informatics PHD, 110
- Library Science MLS, 89
- Human Comp Interaction MS, 85
- Intelligent Systems Engineering PhD, 69
- Information Science MIS, 36
- Data Science GR CRT, 34
- Information Science PHD, 25
- Computer Sci-BS/MS, 20
- Intelligent Systems Engineering MS, 11
- Cybersecurity GR CRT, 7
- Secure Computing MS, 6
- Informatics MS, 5
- Information Architecture GR CRT, 1
- Bioinformatics MS, 0

# A Peek at the Pipeline

- A graduate program in AI

# A Peek at the Pipeline

- A graduate program in AI
- Experiential learning in Silicon Valley

# Employment

- F-1 students need authorization for most categories of work.
  - Job fairs
  - Classified ad, The Indiana Daily Student (IDS)
  - Academic departments
  - University employers: Residence halls (cafeterias, center stores, etc.), Indiana Memorial Union (many different positions), Wells Library and school libraries, Museums, Recreational sports (referees, supervisors, etc.).

# Employment

- F-1 students need authorization for most categories of work.
  - Job fairs
  - Classified ad, The Indiana Daily Student (IDS)
  - Academic departments
  - University employers: Residence halls (cafeterias, center stores, etc.), Indiana Memorial Union (many different positions), Wells Library and school libraries, Museums, Recreational sports (referees, supervisors, etc.).
- As an F-1 student, you may be eligible to work both on and off campus

# Employment

- F-1 students need authorization for most categories of work.
  - Job fairs
  - Classified ad, The Indiana Daily Student (IDS)
  - Academic departments
  - University employers: Residence halls (cafeterias, center stores, etc.), Indiana Memorial Union (many different positions), Wells Library and school libraries, Museums, Recreational sports (referees, supervisors, etc.).
- As an F-1 student, you may be eligible to work both on and off campus
- On-campus employment is when you have a job on campus and are paid by IU. Student hourly position or assistantship.

# Employment

- F-1 students need authorization for most categories of work.
  - Job fairs
  - Classified ad, The Indiana Daily Student (IDS)
  - Academic departments
  - University employers: Residence halls (cafeterias, center stores, etc.), Indiana Memorial Union (many different positions), Wells Library and school libraries, Museums, Recreational sports (referees, supervisors, etc.).
- As an F-1 student, you may be eligible to work both on and off campus
- On-campus employment is when you have a job on campus and are paid by IU. Student hourly position or assistantship.
- You can work on campus up to 20 hours per week during fall and spring semesters (20 hours combined for all jobs).



## Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.

## Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.
- OPT allows you to gain practical training and experience related to your major field of study.

# Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.
- OPT allows you to gain practical training and experience related to your major field of study.
- STEM extension of OPT

## Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.
- OPT allows you to gain practical training and experience related to your major field of study.
- STEM extension of OPT
- All F-1 students who are about to graduate and have been enrolled on the same SEVIS record full time for at least two consecutive semesters (excluding summer terms) are eligible to apply for OPT authorization

## Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.
- OPT allows you to gain practical training and experience related to your major field of study.
- STEM extension of OPT
- All F-1 students who are about to graduate and have been enrolled on the same SEVIS record full time for at least two consecutive semesters (excluding summer terms) are eligible to apply for OPT authorization
- As an F-1 student, you are eligible for 12 months of OPT, must be taken within the 14 months following the completion of program

# Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.
- OPT allows you to gain practical training and experience related to your major field of study.
- STEM extension of OPT
- All F-1 students who are about to graduate and have been enrolled on the same SEVIS record full time for at least two consecutive semesters (excluding summer terms) are eligible to apply for OPT authorization
- As an F-1 student, you are eligible for 12 months of OPT, must be taken within the 14 months following the completion of program
- Applications for OPT can be submitted up to 90 days before program completion date. Need to be received by USCIS no later than 60 days after the completion of the academic program

# Optional Practical Training (OPT)

- F-1 student who will be completing a program of study, may be eligible for 12 months of OPT after completing a program, for each program.
- OPT allows you to gain practical training and experience related to your major field of study.
- STEM extension of OPT
- All F-1 students who are about to graduate and have been enrolled on the same SEVIS record full time for at least two consecutive semesters (excluding summer terms) are eligible to apply for OPT authorization
- As an F-1 student, you are eligible for 12 months of OPT, must be taken within the 14 months following the completion of program
- Applications for OPT can be submitted up to 90 days before program completion date. Need to be received by USCIS no later than 60 days after the completion of the academic program
- USCIS will need three to four months to process an OPT application.

# Curricular Practical Training (CPT)

- CPT is work integral to your program that you do for an off-campus employer in *your field of study* while you are enrolled as a student.



# Curricular Practical Training (CPT)

- CPT is work integral to your program that you do for an off-campus employer in *your field of study* while you are enrolled as a student.
- Must fulfill a requirement for a course you are registered in, such as a required practicum or an internship credit, or help you with a research project, such as a thesis, dissertation

# Curricular Practical Training (CPT)

- CPT is work integral to your program that you do for an off-campus employer in *your field of study* while you are enrolled as a student.
- Must fulfill a requirement for a course you are registered in, such as a required practicum or an internship credit, or help you with a research project, such as a thesis, dissertation
- Must enroll in a corresponding course during the period of time that you will work, or in the term immediately following the work.

# Curricular Practical Training (CPT)

- CPT is work integral to your program that you do for an off-campus employer in *your field of study* while you are enrolled as a student.
- Must fulfill a requirement for a course you are registered in, such as a required practicum or an internship credit, or help you with a research project, such as a thesis, dissertation
- Must enroll in a corresponding course during the period of time that you will work, or in the term immediately following the work.
- Must have authorization from the OIS before you begin.

# Curricular Practical Training (CPT)

- CPT is work integral to your program that you do for an off-campus employer in *your field of study* while you are enrolled as a student.
- Must fulfill a requirement for a course you are registered in, such as a required practicum or an internship credit, or help you with a research project, such as a thesis, dissertation
- Must enroll in a corresponding course during the period of time that you will work, or in the term immediately following the work.
- Must have authorization from the OIS before you begin.
- Working without proper authorization is a violation of your legal status that will require the termination of your Student and Exchange Visitor Information System (SEVIS) record.

# IU Immigration Bridge Program and H-1B

- Solid job opportunity, employer is hesitant about the H-1B visa process, the IU Immigration Bridge program can help you get an offer

# IU Immigration Bridge Program and H-1B

- Solid job opportunity, employer is hesitant about the H-1B visa process, the IU Immigration Bridge program can help you get an offer
- Partnership amongst career center, OIS, and a top immigration law firm-*Fragomen, Del Rey, Bernsen & Loewy LLP*-to assist students with H-1B visa needs by streamlining the visa process for potential employers.

# IU Immigration Bridge Program and H-1B

- Solid job opportunity, employer is hesitant about the H-1B visa process, the IU Immigration Bridge program can help you get an offer
- Partnership amongst career center, OIS, and a top immigration law firm-*Fragomen, Del Rey, Bernsen & Loewy LLP*-to assist students with H-1B visa needs by streamlining the visa process for potential employers.
- Does not guarantee a visa sponsorship, an H-1B visa, or employment, it does improve the likelihood of recruitment both on and off campus for students with U.S. work authorization needs.

# IU Immigration Bridge Program and H-1B

- Solid job opportunity, employer is hesitant about the H-1B visa process, the IU Immigration Bridge program can help you get an offer
- Partnership amongst career center, OIS, and a top immigration law firm-*Fragomen, Del Rey, Bernsen & Loewy LLP*-to assist students with H-1B visa needs by streamlining the visa process for potential employers.
- Does not guarantee a visa sponsorship, an H-1B visa, or employment, it does improve the likelihood of recruitment both on and off campus for students with U.S. work authorization needs.
- Start the program when a job offer from a recruiting company is imminent.



## IU Immigration Bridge Program and H-1B

- Solid job opportunity, employer is hesitant about the H-1B visa process, the IU Immigration Bridge program can help you get an offer
- Partnership amongst career center, OIS, and a top immigration law firm-*Fragomen, Del Rey, Bernsen & Loewy LLP*-to assist students with H-1B visa needs by streamlining the visa process for potential employers.
- Does not guarantee a visa sponsorship, an H-1B visa, or employment, it does improve the likelihood of recruitment both on and off campus for students with U.S. work authorization needs.
- Start the program when a job offer from a recruiting company is imminent.
- The visa process can take several months, with no guarantee of securing an H-1B visa. Employers will cover the full cost of the H-1B visa process.

# SICE Career Services

- Especially trained staff in immigration policies
- Very good understanding of the needs of international students
- Applicant tracking system
- Résumé building and strategy design for international students

## Some Stats

- Classes of 2016,2017,2018: 1253 students
- CS MS 36%, DS MS 25%, ILS MS 19%, HCI/d MS 12%,
- In RES group (1125 students): 64% F-1 visa, 33% US Citizen
- In RES group (1125 students): India 50%, USA 34%, China 10%

## Post-Graduation Outcomes (India)-DS

<b>Year</b>	<b>Employed</b>	<b>Seeking Employment</b>	<b>No Inf.</b>	<b>Total</b>
2016	1	0	1	3, 67%
2017	54	5	4	75, 84%
2018	85	6	4	111, 86%

## Post-Graduation Outcomes (India)-CS

<b>Year</b>	<b>Employed</b>	<b>Seeking Employment</b>	<b>No Inf.</b>	<b>Total</b>
2016	85	0	6	117,78%
2017	145	5	9	208,76%
2018	90	1	7	131,75%

## Data for 2017-18

### CS & DS residential students from India

Total Number Students	369
Total Number With Jobs	252
Percentage Employed	68%
Average Annual Earnings	\$5,635

Top Employers	# Students	Av Pay
SICE	135	\$ 4,654
RPS Dining Services	104	\$ 978
IMU Dining	44	\$ 1,867
IU Auditorium	36	\$ 382
University IT (UITS)	33	\$ 6,788
Business School	18	\$ 4,950

Research Funded Jobs	49	\$ 4,715
----------------------	----	----------

Average # Jobs/Student	1.6
------------------------	-----





SCHOOL OF

**INFORMATICS, COMPUTING, AND ENGINEERING****DATA SCIENCE (RESIDENTAL), MS  
2016-2017****FULL-TIME SPOTLIGHT**

The following reflects information on 68 DS (residential) master's graduates who were seeking employment or continuing education. 56% of graduates directly reported their status. Total knowledge rate is 92%.

**93%**

**secured employment**  
or continuing education within  
six months of graduation

**86%** accepted employment,  
**7%** committed to further education.

**\$83,800**

**average full-time  
starting salary**

based on 28 reported salaries.

**\$6,800**

**average signing bonus  
and/or relocation allowance**

based on 13 reported bonuses.

**Top Hiring Companies****Most Common Destinations****Average Salary by Location**

DS (residential) graduates accepted full-time positions in 20 states plus Washington D.C. and China.

**INTERNSHIP SPOTLIGHT**

The following reflects student-reported information from 53 DS (residential) master's students who completed an internship in fall 2016, spring 2017 or summer 2017.

**Average Pay by Location**

DS (residential) Master's students completed internships in 15 states plus Washington D.C. and India.

**Top Hiring Companies****regalix**
**\$28**  
**average hourly pay**  
for internships  
based on 20 reported salaries
**Most Common Destinations****SCHOOL-WIDE YEAR IN REVIEW****161**

**companies recruited  
on-campus**

through career fairs, on-campus  
interviews, HCI/d Connect, information  
sessions, tech talks, employer panels, and  
student organization events

**650+**

**companies hired  
full-time and/or interns**

**1,369**

**interviews  
were conducted  
on-campus**

**1,040**

total graduates with  
**543 bachelor's degrees**  
**467 master's degrees**  
**30 Ph.D. degrees**



## COMPANIES THAT HIRED GRADUATES: FULL TIME

12 West Capital	BMK Solutions LLC	Homeaway	Microsoft Corporation	System Technology Group
98point6 Inc	CIBO Technologies	IBM	NTT Data Services	The Honest Company
Absolutdata Analytics	Cummins Inc	IMVU	OpenMail	TruScripts
Aetra Inc	Deloitte	Indiana University	PricewaterhouseCoopers	United Educators
Akuna Capital	Discover Financial Services	Industrial and Commercial	Rare Genomics Institute	University of California,
American Institutes for	Elevate	Bank of China, New York	Reliance First Capital LLC	Irvine
Research	Elutions	Innovizant	Return Path	Wayfair
Arthra Solutions	Footlocker.com/Eastbay	Institute for Molecular	RightStrat	Xometry
Axtria-ingenious Insights	Ford Motor Company	Engineering	Scientific Games	Yahoo!
Barclays	Funding Circle US	Intel Corporation	Sentry	
BDIPlus	GoPro	Legislative Services Agency	Sivisoft	
Bloom Insurance Agency	Health4TheWorld	Micron Technology	Synectron	

## ACCELERATORS

The School of Informatics, Computing, and Engineering's Accelerator Corporate Giving Program is a relationship-enhancing investment opportunity that accelerates a company's ability to address their specific, strategic needs. Scholarship dollars generated from Accelerator help to recruit, retain, support, and graduate future tech industry leaders. For more information on strategically investing with the Accelerator Program, contact Gina Gallagher, Senior Director of Corporate and Foundation Relations, at [ggallagh@indiana.edu](mailto:ggallagh@indiana.edu) or 812-856-1847.



### Notes

The Hiring and Post-Graduation Plans Survey and the Internship Survey are annually administered by the School of Informatics, Computing, and Engineering. In the months leading up to and following the end of the academic year, students are contacted by email and phone and asked to complete the online survey(s) that apply to them. LinkedIn and Facebook profiles of graduates as well as employer reported hires were used to contribute to total knowledge rates.

Infographic based on original design by Malena Zook, 2013 Informatics graduate.

School of Informatics, Computing, and Engineering  
Career Services  
700 North Woodlawn Avenue, Bloomington IN 47408

812-856-6016  
[sice.indiana.edu/career](http://sice.indiana.edu/career)

Follow us!@



# Why SICE?

- Broad and multidimensional education

# Why SICE?

- Broad and multidimensional education
- Diversity and Inclusion

# Why SICE?

- Broad and multidimensional education
- Diversity and Inclusion
- Entrepreneurship and Innovation

# Why SICE?

- Broad and multidimensional education
- Diversity and Inclusion
- Entrepreneurship and Innovation
- Innovation in education, staying relevant and current

# Important Dates

- April 15, 2019: Decision deadline
- August 12, 2019: Arrival in US deadline
- August 26, 2019: Classes begin







# Thank You!

ehaghver@indiana.edu

# CS Research Areas

- Formal methods for system design, hardware, and robotics
- Foundations: Theory of computing, algorithms, and applied logic
- High-performance computing
- Cybersecurity
- Graphics and visualization
- Programming languages and compilers
- Artificial intelligence and cognitive science
- Distributed and parallel systems
- Database and information systems
- Computer networks and security
- Security informatics
- Bioinformatics

# INFO Research Areas

- Complex networks and systems
- Health informatics
- Human-computer interaction design
- Intelligent and interactive systems
- Music informatics
- Social informatics

# ISE Research Areas

- Bioengineering
- Computer Engineering
- Cyber-physical Systems
- Environmental Engineering
- Molecular and Nanoscale Engineering
- Neuroengineering

# Research Centers

- Center for Applied Cybersecurity Research, 5 affiliated faculty
- Center for Bioinformatics Research, 6 affiliated faculty
- Center for Complex Networks and Systems Research, 13 affiliated faculty
- Center for Data and Search Informatics, 10 affiliated faculty
- Center for Research in Extreme Scale Technologies, 5 affiliated faculty
- Center for Research On Mediated Interaction (CROMI)
- Center for Security Informatics, 7 affiliated faculty

- Cyberinfrastructure for Network Science (CNS) Center, 1 affiliated faculty
- Data to Insight Center, 1 affiliated faculty
- Digital Science Center, 3 affiliated faculty
- Indiana University Network Science Institute, 3 affiliated faculty
- Rob Kling Center for Social Informatics, 8 affiliated faculty
- Web Science Center

# Weather

Climate data for Bloomington, Indiana													<a href="#">[hide]</a>
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °F (°C)	78 (26)	76 (24)	86 (30)	91 (33)	97 (36)	103 (39)	110 (43)	104 (40)	103 (39)	96 (36)	84 (29)	74 (23)	110 (43)
Average high °F (°C)	38.8 (3.8)	42.3 (5.7)	53.0 (11.7)	65.0 (18.3)	75.1 (23.9)	83.2 (28.4)	87.3 (30.7)	85.9 (29.9)	79.7 (26.5)	68.4 (20.2)	53.9 (12.2)	41.6 (5.3)	64.5 (18.1)
Average low °F (°C)	21.2 (-6.0)	23.2 (-4.9)	32.1 (0.1)	42.6 (5.9)	52.5 (11.4)	61.4 (16.3)	65.2 (18.4)	63.4 (17.4)	56.3 (13.5)	44.8 (7.1)	34.7 (1.5)	24.6 (-4.1)	43.5 (6.4)
Record low °F (°C)	-21 (-29)	-20 (-29)	-2 (-19)	17 (-8)	29 (-2)	36 (2)	46 (8)	41 (5)	26 (-3)	17 (-8)	-2 (-19)	-20 (-29)	-21 (-29)
Average precipitation inches (mm)	2.66 (68)	2.71 (69)	3.66 (93)	4.29 (109)	5.12 (130)	4.07 (103)	4.32 (110)	3.99 (101)	3.62 (92)	3.14 (80)	3.95 (100)	3.38 (86)	44.91 (1,141)
Average snowfall inches (cm)	5.7 (14)	4.4 (11)	2.1 (5.3)	0.4 (1.0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0.1 (0.25)	1.2 (3.0)	4.7 (12)	18.6 (47)