



SPRING 2020

# DEPAUL CENTER FOR DATA SCIENCE

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DEPAUL

COLLEGE OF COMPUTING  
AND DIGITAL MEDIA

## Faculty News

- Dr. John McDonald, an associate professor in CDM's School of Computing (SoC), draws math equations in midair. They glow in the dark as he expounds on linear algebra in data analysis. It's a video made using lightboard technology in a new production studio run by DePaul's Center for Teaching and Learning (CTL). The Loop campus studio is a jointly funded collaboration between CDM and CTL, which helps faculty design online courses. Its pilot phase this fall comprises five data-science videos, including this one for McDonald's Advanced Data Analysis course. Discover more information on [\*In the Loop\*](#).
- Dr. Alexander Rasin received a \$50,000 grant under the [\*NSF I-Corps program\*](#) for his project investigating the commercial potential of database forensics -- a research project partially supported by an NSF award CNF-1656268. The research project studies the reconstruction and analysis of storage in different Database Management Systems (DBMS). This project is expected to start in April, 2020. His team will explore two application types where no competing technology is available on the market: database forensic analysis tools and database monitoring tools.



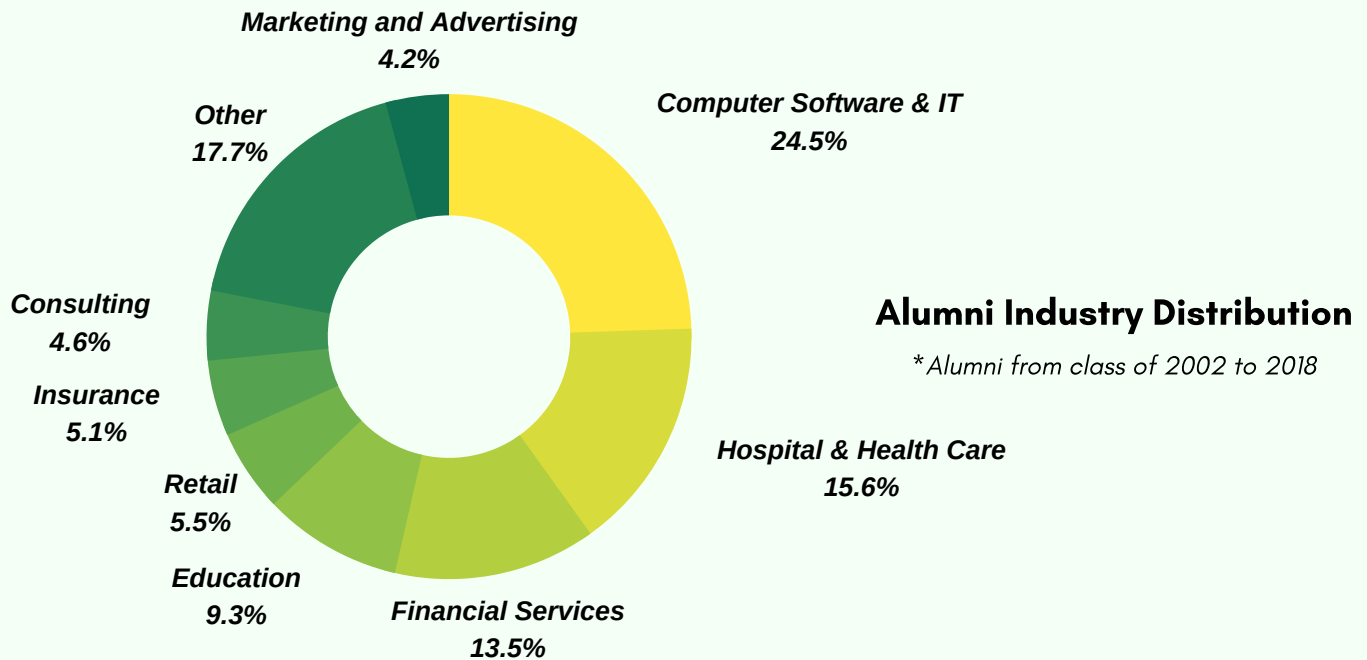
## New Projects

- **Building Ontologies** (*Project Leader: Dr. Thiru Ramaraj*)

**Description:** Successful development of a biofilms information system requires a framework for representing and communicating information about this highly complex domain. To meet this requirement we will develop a biofilms ontology that captures the concepts used in biofilms research, the attributes of these concepts, and the relationships among them. This ontological framework will directly inform the data model that will support the information system, and its database implementation. To the extent possible, we will reuse existing ontologies in domains that overlap with biofilms research. Interested students can contact Dr. Thiru Ramaraj at [tramaraj@depaul.edu](mailto:tramaraj@depaul.edu)



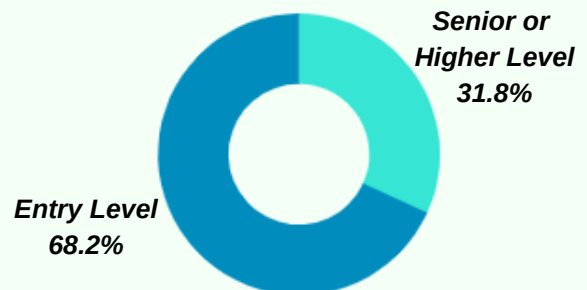
# ALUMNI INFORMATION



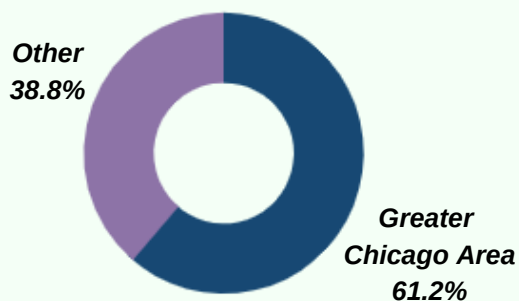
**Top 5 industries in which our alumni work are Computer Software & IT, Hospital & Health Care, Financial Services, Education, and Retail**

**Alumni Position Level Breakdown**

About 32% of our alumni currently work in a senior or higher level position



## Alumni Location Breakdown



**Over 60% of our alumni currently work in the Greater Chicago Area**

# INTERVIEW WITH DATA SCIENCE PROFESSOR



## Jonathan Gemmell, PhD

Jonathan F. Gemmell is an Assistant Professor in the School of Computing at DePaul University. He holds a BA in Classics, an MS in Computer Science and a PhD in Computer Science. His research focuses on the social web, data analysis and artificial intelligence. He is a faculty member at the Web Intelligence Laboratory. He has published dozens of articles in international peer-reviewed conferences and journals. His previous business experience includes trading foreign currency derivatives on the floor of the Chicago Mercantile Exchange and managing a trading and investment group.

### Q1: What are your current research interests?

I am currently looking at how users understand recommender systems, how this understanding changes their behavior in online systems, and how to improve recommender systems by observing and understanding such behavior. Also, I am interested in how to evaluate performance in online games and how ratings can be used for group assignments.

### Q2: Why did you choose this profession/field?

Computer science and data science are now iniquitous in the modern world. Studying these fields gives you a license to study anything you are interested in. For example, I have been able to do research in recommender systems, the social web, heart disease, suicide, video games and the models of human understanding...all through the lens of computer science and data science.

### Q3: What courses are you teaching and what benefits do you see in these courses?

I designed and currently teach the online-only version of DSC 423: Data Analysis and Regression. This online version has several short edited videos recorded for an online audience.

I also teach DSC 430: Python Programming. The emphasis should be on "programming". Students will learn how to write.

### Q4: What is your teaching style like?

I favor storytelling and classroom discussions. I attempt to engage the students in the consequence of what they are learning. And, I also assign a lot of work.

### Q5: What are your research plans for this year?

My research lab is conducting extensive interviews of users and their understanding of recommender systems. These interviews will be analyzed for patterns. We will then mine user histories to see if we can observe patterns based on the user's understanding of how recommenders work.

We are also predicting the ranking of players in online sudden death first-person shooters. Based on these rankings we will then develop algorithms for group assignments in online games.

# INTERVIEW WITH PHD STUDENT



## James Wagner

James Wagner is a sixth year Ph.D. candidate in the College of Computing and Digital Media (CDM) at DePaul University. He received his Master's in Computer Science from DePaul University and his Bachelor's in Chemistry from Marquette University. As a member of the Data Systems and Optimization Lab at CDM, he leads projects in digital forensics, database security, and database performance.

### Q1: Can you briefly describe your research?

My research explores 1) database-agnostic forensic methods to examine DBMS contents from any evidence source (e.g., disk images or RAM snapshots) without using a live system and 2) applications of our forensic analysis methods to secure data. The foundation of this analysis is page carving, our novel database forensic method that we implemented as the tool DBCarver. We demonstrate that DBCarver is capable of reconstructing DBMS contents, including metadata and deleted data, from various types of digital evidence. In the event of suspected log tampering or direct modification to DBMS storage, DBCarver can be used to verify log integrity and discover storage inconsistencies.

### Q2: Why did you choose to pursue a PhD in computer science?

I chose to pursue a Ph.D. in computer science because I wanted to keep working on my Master's research project. During the first year of my Master's, I got involved with a project by casually talking to a professor. I had no intention of working on a project in this field. Eventually, I quit a paid internship so I had more time to work on this (unpaid) project. I saw the potential for a more exciting experience in research. This was a pretty good indicator that I wanted to do a Ph.D. rather than get a job in industry.

### Q3: What does it mean to be a GAANN fellow for a PhD?

GAANN stands for Graduate Assistance in Areas of National Need. These fellowships are meant to support research and teaching in mainly STEM fields. To receive a GAANN fellowship you must be a US citizen and there is a separate application from the CDM stipend. GAANN fellowships typically pay more than most other Ph.D. funding options. One expectation for the fellowship is that you teach at least one course per year so plan on teaching around your third year. Prepare for teaching in your first two years: ask your advisor if you can prepare course material, substitute for lectures, etc.

### Q4: In your opinion, what are the benefits for getting a PhD vs Masters?

A Masters is more career-oriented for jobs in industry. It is structured and not as big of a commitment as Ph.D. During the time you put into a Ph.D., you could probably do more for your career in industry. If a high salary is one of your goals, a Masters along with focusing your time on your career is probably the route to go.

A Ph.D. is a much bigger commitment and is not structured like a Masters. A Ph.D. allows you to focus on a problem you are interested in. This problem should not be something anyone else has solved before so you really can't go to anyone for the answers; you need to find the answers.

### Q5: What advice do you have for students who are pondering for a PhD?

You have a lot of freedom. You should spend this time investing in yourself rather than meeting your program or advisor's minimum expectations. This doesn't necessarily mean learning a new computer science skill. You could work on things such as public speaking, writing, or do something to spark creativity. You set your own goals and define what it means to be successful. If you are not self-motivated enough to do all of this and are just meeting the minimum expectations, I think a Ph.D. will be a waste of your time.

Some people do a Ph.D. for the "prestige." I've seen plenty of students do this. I personally don't think this is a good reason because those people aren't all that invested in the program. You don't need a Ph.D. for people to take you seriously.



# INTERVIEW WITH OSS ASSISTANT DIRECTOR



## Sarah Primozich

### *Assistant Director, Online Student Services (OSS)*

I graduated from the University of Wisconsin Whitewater with a BA in Organizational Communications and earned a Master of Education (M. Ed) from Northeastern University in Boston, MA. I can relate to our online students experiences because I also completed my Master's Degree entirely online and while working full time. I moved to Chicago from San Diego last year and enjoy the ocean, travel, hiking and cooking.

#### **Q1: Tell us about your job responsibilities**

My role includes covering the strategic and operational management for activities and services related to the successful recruitment, enrollment and transition of online MS Data Science students at DePaul University. I work in collaboration with the various academic and support departments at DePaul to plan, develop and coordinate events and provide resources and services that assist students in the successful completion of their academic, out of class experience.

#### **Q2: What are the resources available for online learning?**

For years, DePaul has invested in developing Award-winning training for online faculty, unique online curriculum and digital learning tools. Academically, the College of Computing and Digital Media (CDM) does not differentiate between an online and on-campus student; classes are taught by the same faculty who teach on campus. In addition students have online access to the programs in class lectures: everything in the classroom from audio and video to whiteboard notes and the professor's supplemental materials. The lectures can be streamed or downloaded for offline viewing. CDM's Course Online System (COL) records lectures and posts them online within two hours of the class session. We strive to make the online student experience as flexible, convenient and tailored as possible. Exams taken in online courses are monitored by a proctor of the student's choice and closest to them. Tutoring, Career Services, advising and faculty advising can all be done remotely as well.

The MS Data Science program recently launched videos for online students using light board technology in a new production studio run by DePaul's Center for Teaching and Learning (CTL). A lightboard is a next-generation whiteboard that can be used by educators to write information for display to an entire class. They don't replace videos of complete classroom lectures but they do provide a more personalized interaction between professors and students. On campus, MS Data Science specific events will also be recorded throughout the year and sent to remote students, giving them the access to the same experiences that on ground students have. This year we will also have events specifically for our online students that will give them the opportunity to interact with a variety of departments, but remotely.

#### **Q3: What is your favorite part in working with online students?**

My favorite part in working with online students is assisting a wide variety of students enrolled in the program from all over the country. Students generally range in age from 23 to 55 and have a diverse array of backgrounds, motivations and perspectives. The conversations I have with students in particular, highlight this breadth. I enjoy getting to know everyone and making a personal connection, even if done entirely via computer or over the phone!

# INDUSTRY MISSION

To seek partnerships with industry, governmental, non-profit organizations and other universities to conduct joint projects and to provide students with practical real-world experience in data science.

## CONTACT US



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