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TEACHING STATEMENT & CAREER GOALS

I am grateful to my true teachers, the ones that citing a quote from Nikos Kazantzakis[1] *"used themselves as bridges, invited us to cross over it, facilitated our crossing, and then encouraged us to create our own"*. This model of an effective teacher, along with a sense of service and my zest for lifelong learning and transferring knowledge to others have attracted my interest in pursuing a career in academia.

Over the last few years, I have had the opportunity to teach in several different capacities:

- as an *Assistant Professor* (4 years, 2016 – present) at **York University, Toronto, Canada**
- as a *Lecturer / Professional Faculty* (1 year; 2015 – 2016, while a Post-doc) at the **University of California, Berkeley, United States**
- as a *Sessional Instructor* (5 years; 2010 – 2015, while a PhD student) at the **University of Toronto, Canada**

The courses that I teach span several fundamental subjects of the graduate and undergraduate curriculum of Computer Science and Engineering including graduate courses in information networks and data analytics, as well as, undergraduate courses in databases, big data systems and programming. As a result, I have acquired extensive experience in developing and teaching courses and educational material, as well as, in knowledge transfer to students through supervision, mentoring and student-teacher interaction.

Besides my genuine passion for teaching, I was always looking for opportunities to improve my own teaching practices and educational skills. For instance, I have completed the THE500 (Teaching in Higher Education) program of the University of Toronto that aims to prepare senior PhDs and post-doc fellows for academic careers. The THE500 was a great experience that have improved my teaching practices by making me more knowledgeable about the ways in which students learn and about different teaching theories and styles.

Computer Science with a focus on Data Science is one of the most dynamic and exciting disciplines to study as it offers challenging and significant curriculum, mainly due to the breadth of educational opportunities and the potential to have an impact on real-world problems. Therefore, *teaching in this discipline* means teaching the next generation of technology and innovation professionals, entrepreneurs and researchers. With the advent of technology, teaching in higher education can be an even more exciting and rewarding experience. E-learning technologies, as well as, distance learning technologies, such as the recent development of Massive Open Online Courses (MOOC) offer many opportunities and challenges. These are even more stressed in teaching in the field of Computer Science where students are highly creative, have broad interests and look for ways to apply their knowledge to many other fields, such as the physical and biological sciences, health, finance, the humanities and fine arts, among many others. This calls for an interdisciplinary approach of teaching in computing disciplines, with frequent references to real-life problems and examples, as well as, sophisticated design of projects and assignments that can have an impact in people's everyday lives - characteristics that I consistently try to instill in my teaching practices.

Since joining York University in the summer of 2016, I have contributed in the teaching activities of the department, both at the undergraduate and at the graduate level. *At the undergraduate level*, **I have introduced two new undergraduate courses**, "EECS 4414 – Information Networks" and "EECS4415 – Big Data Systems". Both courses are offered as 4th year courses and cover material in emerging disciplines of immense importance of data science. In addition, I have taught courses of the core Computer Science program curriculum, including "EECS2031 – Software Tools" (2nd year) and "EECS3421 – Introduction to Database Management Systems" (3rd year). *At the graduate level*, **I have introduced two new graduate courses**, "EECS 6414 – Data Analytics and Visualization" and a cross-listed course, "EECS 5414 – Information Networks". Both courses focus on methods and models for efficient representation of data and the knowledge that students obtain is of immense importance to any data-driven organization. I am also **organizing a graduate seminar on advanced topics in data mining (2016 – present)**. I am confident that my longtime commitment in teaching and research activities, along with exposure to industrial environments, both as a researcher and an innovator, provides for a teaching context that is effective and interesting for the students and complements the teaching capacity of the EECS department and York University.

Transferring knowledge to others and experiencing the joy of making a clear difference in the lives of students, as they gain new insights and become more interested and knowledgeable in a subject is very rewarding. In addition, enjoying a high level of interpersonal interaction with students and other teaching professionals, being a lifelong learner by incorporating new research findings, technologies and science events into the classroom are aspects of life that I pursue and enjoy in my career. I believe that teaching in higher education in the field of Computer Science helps to achieve these. My goal is to continue contributing to York University's mandate to educate the next generation of computer scientists. It aspires to be part of an academic environment that welcomes creativity, fosters the interchange of ideas and academic conversations, and encourages collaboration that can help me grow as an educator.

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[1] Modern Greek writer & philosopher

TEACHING PHILOSOPHY

KNOWING YOUR STUDENTS AND HELPING THEM FULFILLING THEIR LEARNING EXPECTATIONS & CAREER GOALS

Each year, large numbers of students are attracted to departments of Computer Science, Computer Engineering and related disciplines with the confidence that they will pursue an interesting and innovative curriculum due to the breadth of educational opportunities, along with the reasonable prospect of following an interesting high-quality career. In fact, these are examples of the most dynamic and exciting disciplines to study, where one can have an impact on both scientific discovery and solving real-world problems. Therefore, teaching in this discipline means teaching the next generation of technology and innovation professionals, entrepreneurs and researchers.

Computer Science students expose specific characteristics – they are highly creative, enjoy solving problems and being mentally challenged, like to take initiative, design and build things, are genuinely curious and tech-savvy, know how to search and combine information – which provide for opportunities and challenges for the educator. As a result, they usually have broad interests and look for ways to apply their knowledge to many other fields, such as the physical and biological sciences, health, finance, the humanities and fine arts, among many others. This calls for an *interdisciplinary approach* of teaching in computing disciplines, with frequent references to real-life problems and examples and sophisticated design of projects and assignments that can have an impact in people's everyday lives. (This is reflected in several projects that I have designed in the courses I have taught; for details please see details in the teaching experience section.)

Moreover, there are diverse educational objectives that students in computing have. They need to be prepared for pursuing post-graduate education or pursuing successful professional careers, or even to become leaders in their field of expertise. As a result, teaching in computing is related not only to the need of students to obtain *technical skills*, but also *soft skills*. The former is related to their ability to apply knowledge of mathematics, science and engineering in order to identify, formulate, and solve problems or design systems and processes that conform to given cost constraints and specifications. The latter is related to their ability to work cooperatively, respectfully, creatively, and responsibly as members of a team, understand the norms of expected behavior in computing practice and the underlying ethical foundations and communicate effectively by oral, written, and graphical means. It also requires an awareness of global and societal concerns and their importance in developing engineering solutions. (This teaching approach is reflected in several projects that I have designed in the courses I have taught; for details please see details in the teaching experience section.)

MY TEACHING CONTEXT AS A REFLECTION OF A TEACHER, RESEARCHER & TECHNOLOGY INNOVATOR

My teaching context and ability of transferring knowledge is principally based on three dimensions of my profile; my experience assuming roles of a *teacher*, *researcher* and *technology innovator*.

MY EXPERIENCE AS A TEACHER

As a higher education teacher, I try to display evidence of effective course planning and student-teacher relationships, to demonstrate enough mastery of the subject area, to make effective use of a variety of available materials and provide for student participation. I regularly use purposeful and thought-provoking questions and provide interesting and adequate reinforcement and motivation. My directions to students are clearly thought out and well stated and class material is well organized and timely available online, while student assignments are carefully designed and planned. Furthermore, I try to maintain student interest and attention and work constructively with individuals or groups. In my interaction with students I use positive statements and try to maintain a friendly but respectful teacher-student relationship. (This approach is reflected in several student comments that I include in Appendix I and Appendix II.)

As an effective teacher, I try to provide the larger perspective of the course material to students, usually bringing examples from the real-world and trying to make them aware with *real-world challenges*, *practices* and *experiences*. More importantly, I understand that a course is an integral part of a student's overall learning experience in a university program. As such, an instructor's interest and goal should be to try to *fill the gap between different curriculum courses* by extending students' existing knowledge and by preparing them for the courses to follow in their program. This requires coordination with other instructors and mutual understanding of a student's needs.

MY EXPERIENCE AS A RESEARCHER

My long-term exposure to conducting research helps enhancing the understanding of students on a number of computing concepts. Regularly, I make references to open research problems and challenges, as well as, how different research approaches to solve a problem, have resulted in the tools that have become popular today. This provides for a learning environment that goes beyond sterile knowledge into including decision making processes, as well as, challenges and breakthroughs, and in the end offers a better understanding of the material which turns students to, not only effective users, but also real experts of their discipline.

On another note, my research interests span a broad range of interesting and timely topics, including *data mining*, *graph and information network mining*, *machine learning*, *databases*, *big data systems* and *knowledge discovery*. Therefore, it is easier to design interesting courses and projects that can attract and engage many students. And, as these topics require an interdisciplinary approach with questions and ideas coming from both social and computing sciences, they can be of interest to students in other disciplines. My publication record, the citations to my publications, as well as, previous work experience reflect on these interests (please refer to the Curriculum Vitae and Research Statement for details).

MY EXPERIENCE AS A TECHNOLOGY INNOVATOR

Besides my experience as a teacher and researcher, I have had the opportunity to obtain valuable industrial experience in several different capacities: twice, as a research intern, in a world-renowned research lab, such as Yahoo! Research, as a patent innovator applying for three technological patents (one patent issued), and as a software architect of two large-scale information systems – (i) a world-class conference management system, and (ii) a system for socio-technical analytics of green buildings. My experience in Yahoo! Research was tremendous, as it was providing of an environment that requires *thinking big* of both problems and engineering solutions that can have impact in the lives of millions of users. This provided with invaluable experience that I consider important to my teaching career, as it is easier to realize the potential of students when you are exposed to the real computing problems of our world. It also helps the build a syllabus that is rigorous and in alignment with global problems and approaches and make the right references when needed.

Besides my interest in conducting quality research, I am very fascinated in building large-scale information systems. Among others, such as a Movie Recommendation System dedicated to research purposes, an Online Questionnaire System, and a system for Socio-technical Analytics of Green Buildings, I would like to especially refer to *Confious (active from 2005 – 2015)*, a state-of-the-art conference management system that combines modern design, sophisticated algorithms and powerful engine, so as to efficiently and professionally support the submission and reviewing process of an academic/research conference or workshop. It is important to note that my involvement with *Confious* provided for hands-on experience on the whole *business development process*; from design, development and maintenance of the service to sales and customer support, experience that I would like to share with the prospective entrepreneurs and innovators of our student body.

Overall, I am confident that my experience as a *teacher*, *researcher* and *technology innovator* reflects a unique teaching context and capacity that positions me well for pursuing a career in higher education teaching in the discipline of Computer Science.

ENCOURAGING SOCIAL LEARNING

Reading course material from textbooks, working on assignments and projects, looking for extra information in other available resources, either offline or online, are essential and valuable aspects of the learning process. However, all these are further enhancing one's expertise and understanding of a subject when applied within a *social context*. I regularly recall my years as an undergraduate student and I come to realize the importance of spending, along with classmates, long hours in our computer labs (at that time Google was a fresh startup and dialup internet connections were not widely available outside a university network). There is a large number of social interactions that take place when you physically share a working or reading environment with colleagues or classmates. Sharing information, trying to prove yourself or each other wrong (or right), challenging ourselves or being exposed to fallacies and pitfalls were all aspects of a *social learning process* where we were seeking acceptance from our social group and we were learning through influential models. It is my strong belief that being exposed and engaging in such social interactions, on a daily basis, for a number of years, was critical to our deep understanding of computer science concepts and is describing a learning environment that is impossible to bring or reproduce in a lecture class or when one is working at home.

Motivated by my own experience of social learning processes that were in effect in our computer labs, I always try to convince my students to share knowledge (not solutions) with their colleagues and classmates, engage in fruitful discussions, share ideas and collaborate (as needed), work together to understand concepts/assignments and constantly challenge their knowledge by asking the right questions to themselves and their classmates. In fact, I am silently but consistently inviting those students to adhere to social learning practices that I'm sure will position them better in any working environment in the future to come.

INSTILLING A SUPPORTIVE CULTURE THAT BRINGS OUT THE BEST IN STUDENTS

Despite the large size of undergraduate classes and diversity of student body, it is important to maintain or put forward a supportive learning culture to the students in a positive and assertive way that presumes success. This effort implies interacting with students at a level of mutual trust, many times beyond class or regular office hours. My goal as an instructor is to develop each student's capacity for original and incisive thinking, as well as, their understanding of fundamental concepts, so that they will be better positioned to solve the computing and engineering problems of the years to come. (This is reflected in a number of student comments that I include in the Appendices.)

TEACHING EXPERIENCE

This section provides an overview of my teaching experiences by role and by university department. I have had the opportunity to teach in several different capacities: as an Assistant Professor at York University's Lassonde School of Engineering, Electrical Engineering and Computer Science and Faculty of Graduate Studies (4 years), as a Lecturer / Professional Faculty at the Masters in Data Science (MIDS) of the University of California, Berkeley's School of Information (1 year), as a Sessional Instructor (5 years) at the department of Computer Science of the University of Toronto, Canada. The courses that I taught were spanning many fundamental subjects of the graduate and undergraduate curriculum including introductory courses in programming, systems programming, programming on the web, information networks, databases, big data systems and data analytics. As a result, I have acquired extensive teaching experience in developing courses and educational materials, as well as, in mentoring and interacting with students. Detailed course descriptions are provided in **Appendix I**.

ASSISTANT PROFESSOR (2016 – PRESENT) AT YORK UNIVERSITY, TORONTO, CANADA

I have obtained extensive experience working as an Assistant Professor at York University's Lassonde School of Engineering and Faculty of Graduate Studies (11 appointments, and another 2 scheduled). In particular:
- At the graduate level (Faculty of Graduate Studies, York University)
  - EECS 6414 – Data Analytics and Visualization (Fall 2017, Winter 2019, Winter 2020, Winter 2021 scheduled)
  - EECS 6413 – Information Networks (Winter 2017)
  - EECS 5414 – Information Networks (cross-listed with EECS 4414; Fall 2020 scheduled)
- At the undergraduate level (Electrical Engineering and Computer Science, Lassonde School of Engineering, York University)
  - EECS 4415 – Big Data Systems (Fall 2018, Fall 2019)
  - EECS 4414 – Information Networks (Winter 2018, Fall 2020 scheduled)
  - EECS 3421 – Introduction to Database Management Systems (Winter 2019, Fall 2019, Summer 2020)
  - EECS 2031 – Software Tools (Winter 2018)

PROFESSIONAL FACULTY (2015 - 2016) AT UNIVERSITY OF CALIFORNIA, BERKELEY, UNITED STATES

I have obtained extensive experience working as a Lecturer / Professional Faculty at the University of California, Berkeley's Master of Information & Data Science (MIDS) program (offered by the School of Information & delivered online at https://datascience.berkeley.edu).
- School of Information, University of California, Berkeley
  - Data Science W205 – Storing and Retrieving Data (Fall 2015, Winter 2016, Spring 2016; each with 2 sections)

SESSIONAL INSTRUCTOR EXPERIENCE (2010 - 2015) AT UNIVERSITY OF TORONTO, TORONTO, CANADA

I have obtained extensive experience working as a Sessional Instructor at the University of Toronto, Canada in various courses of the Computer Science curriculum (more than 10 appointments). In particular:
- Computer Science Department, University of Toronto
  - CSC343-Introduction to Databases (Winter 2015, Fall 2014, Winter 2014, Fall 2013, Fall 2012, Fall 2011)
  - CSC309-Programming on the Web (Winter 2015, Summer 2012, Summer 2011)
  - CSC209-Software Tools and Systems Programming (Summer 2013)
- Electrical and Computer Engineering Department, University of Toronto
  - APS105-Computer Fundamentals (Fall 2010)
- Mechanical and Industrial Engineering Department, University of Toronto
  - APS106-Fundamentals of Computer Programming (Winter 2013)
- Computer and Mathematical Sciences Department, University of Toronto, Scarborough
  - CSCC43-Introduction to Databases (Winter 2015)
  - CSCB09-Software Tools and Systems Programming (Winter 2012)

As an instructor I was responsible for all aspects of delivering the course, including: planning the lectures, tutorials, assignments and tests, and marking schemes; maintaining a course website, delivering the lectures; providing appropriate contact time outside of class to students, through office hours, email, the course website and/or the course bulletin board; writing the TA contract(s) for the course and supervising the TAs; managing the grading for the course; doing any grading not handled by TAs; invigilating the final exam; managing the grades and submitting final course grades; coordinating with the other instructor(s) to maintain consistency (when there were more than one instructors).

EVIDENCE OF TEACHING EXCELLENCE

This section provides an overview of material that can serve as **evidence of teaching excellence**. More details can be found in the Appendixes. In particular, detailed descriptions of the courses are provided in **Appendix I**. Sample student testimonials can be found in **Appendix II**. Summary of course evaluations can be found in **Appendix III**.

For consistency, the overview of the supporting material is organized based on the following **list of evaluation criteria** considered by the Lassonde's Faculty Teaching Award Committee:

- Demonstrates Pedagogical Innovation

- Demonstrates Substantial Continuing Involvement in Undergraduate and Graduate Education

- Introduced New Curricular Content / Course Design / Curriculum Development

- Demonstrated Exceptional Use of Technology

- Classroom Instruction / A Focus on the Student and Their Experience/ Exceptional Performance in the Classroom / Is Committed to, Continuous High-Quality Teaching / Innovative Teaching Methods

- Ability to Stimulate Critical and Analytical Thinking in Students and Create an Engaging and Rewarding Learning Experience

Some of the evaluation criteria are semantically overlapping, so they are grouped together for brevity.

Demonstrates Pedagogical Innovation

I am borrowing a passage about the meaning of pedagogy[2].

> *"Pedagogy is leading people to a place where they can learn for themselves. It is about creating environments and situations where people can draw out from within themselves, and hone the abilities they already have, to create their own knowledge, interpret the world in their own unique ways, and ultimately realize their full potential as human beings." – Steve Wheeler*

Following that principle of pedagogical innovation, in my advanced undergraduate course (eecs4415) and graduate course (eecs6414), students are working on **open-ended projects**. I am providing guidance, suggestions, but students need to find a dataset, define a problem and its scope, make right use of technologies and right a technical report. As depicted in the student testimonials below, while this is challenging, it is more engaging, and students get motivated to work harder (see **Appendix II**).

Demonstrates Substantial Continuing Involvement in Undergraduate and Graduate Education

Since I joined York University (Jul 2016), I have taught eleven (11) courses, four (4) at the graduate and six (7) at the undergraduate level. The undergraduate courses span 2nd, 3rd and 4th year courses of the curriculum. More details about these courses are provided in **Appendix I**. Sample student testimonials can be found in **Appendix II**. Summary of course evaluations can be found in **Appendix III**.

Introduced New Curricular Content / Course Design / Curriculum Development

Since I joined York University (Jul 2016), **I have introduced three (3) new courses** in the CS curriculum, one (1) graduate course, one (1) cross-listed as grad/undergrad course and one (1) undergraduate course. In particular:

- EECS 6414 – Data Analytics and Visualization (graduate course)

- EECS 5414/4414 – Information Networks (cross-listed graduate/undergraduate course)

- EECS 4415 – Big Data Systems (undergraduate course)

These courses focus on new methods and models for efficient representation, storage, processing and delivery of data. The knowledge that students obtain is of immense importance to any data-driven organization. More details about these courses are provided in a separate section below. The courses were very well received by our student population. In the last two years that they are offered, EECS4415 has been **the most popular 4th year course** in the CS curriculum and EECS6414 has been **the most popular graduate course**. Students' opinion about the intellectual content of these courses is depicted in their comments (see **Appendix II**):

In addition, I have **completely redesigned and updated** the teaching material for the following **two courses** as follows:

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[2] http://www.steve-wheeler.co.uk/2013/11/the-meaning-of-pedagogy.html

- EECS 3421 – Introduction to Database Management Systems

    o Redesigned and updated **all teaching material** including *slides*, *assignments*, *tutorials*, *midterm* and *final exam tests*.

    o Migrated to an open-source database management system (PostgreSQL) – till now IBM DB2 was used.

- EECS 2031 – Software Tools

    o Redesigned and updated **all teaching material** including *slides*, *assignments*, *tutorials*, *midterm* and *final exam tests*.

Demonstrated Exceptional Use of Technology

I try to make good use of available technology to improve the learning experience and engagement of students. In particular:

- **Use of modern systems**: I try to incorporate modern technologies in lectures and assignments that will be useful to students in real-world scenarios. This is especially true in the EECS4415 – Big Data Systems course, where the landscape of the data processing systems available has dramatically changed in the last decade.

- **Use of a modern Question/Answering platform (Piazza)**: It provides a modern, more engaging and intuitive interface for providing answers to student questions or to facilitate discussions among students.

- **A mobile-first course website**: Course websites are designed that adhere to best practices of UI/UX (highly responsive) and improves student engagement. All material is directly available there.

These technologies make sure that students are updated to the newest technologies related to the course material. In addition, it ensures that they can access learning components and activities on the go, as they QA and course website are available to cell phones (see **Appendix II**).

Classroom Instruction / A Focus on the Student and Their Experience/ Exceptional Performance in the Classroom / Is Committed to, Continuous High-Quality Teaching / Innovative Teaching Methods

Transferring knowledge to others and experiencing the joy of making a clear difference in the lives of students, as they gain new insights and become more interested and knowledgeable in a subject is very rewarding. In addition, enjoying a high level of interpersonal interaction with students and other teaching professionals, being a lifelong learner by incorporating new research findings, technologies and science events into the classroom are aspects of life that he enjoys in his role as an educator. A great sample of student testimonials regarding performance in the classroom can be found in **Appendix II**. Summary of course evaluations can be found in **Appendix III**.

Ability to Stimulate Critical and Analytical Thinking in Students and Create an Engaging and Rewarding Learning Experience

In some cases, teaching a course provided the opportunity to further collaborate with graduate and undergraduate students. These collaborations have proven to be very fruitful as demonstrated by several achievements. The most important ones are listed below:

- Related to EECS 6414: I have co-authored four (4) papers (1 journal, 2 conference and 1 workshop in reputable venues) with graduate students (not directly supervised by me) that attended my graduate course. One of them was awarded a **best paper award**.

- Related to EECS 4415: Several students approached me for research opportunities in the Data Mining Lab. Students have applied and secured funding through USRA/LURA awards. Another couple of students are currently working with me on EECS 4080 and EECS4088 computer science project courses.

- Related to EECS 5414 / 4414: Several students were exposed to the topics of graph mining and network mining and some are working with him on research problems. Some of these students are also applying to our MSc and MSc in AI graduate programs.

Please see my **Curriculum Vitae** for details about the undergraduate students and the graduate projects supervised.

APPENDIX I: COURSE DESCRIPTIONS

This Appendix provides brief course descriptions at institutions where I have taught, including the **University of Toronto (2010 – 2015)**, the **University of California, Berkeley (2015 – 2016)**, as well as, the **York University (2016 – present)**.

YORK UNIVERSITY (2016 – PRESENT)

EECS6414 – Data Analytics and Visualization (Winter 2020, Winter 2019, Fall 2017)
Website: https://www.eecs.yorku.ca/~papaggel/courses/eecs6414/

Data analytics and visualization is an emerging discipline of immense importance to any data-driven organization. This is a project-focused course that provides students with knowledge on tools for data mining and visualization and practical experience working with data mining and machine learning algorithms for analysis of very large amounts of data. It also focuses on methods and models for efficient communication of data results through data visualization.

EECS4415 – Big Data Systems (Fall 2019, Fall 2018)
Website: https://www.eecs.yorku.ca/~papaggel/courses/eecs4415/

This course introduces the fundamentals of big data storage, retrieval, and processing systems. Topics include software frameworks for distributed storage and processing of very large data sets, MapReduce programming model, querying of structured data sets, column stores, key-value stores, document stores, graph databases, distributed stream processing frameworks.

There were three fundamental **challenges** in teaching this course in Fall 2018:

- This is a relatively new course, as it has only been offered twice. While the course was proposed by me and got approved in 2017, in its first iteration it was delivered by another professor. While there was some material available from the first offer, I made the decision to go with a new version of slides, tutorials, assignments, projects and a fresh-look website.
- The technologies are relatively new, so they are not available in the PRISM labs. They are also not trivial to install, as they mostly rely on availability of a distributed cluster (that is not available in the department).
- Due to the aforementioned challenges, designing assignments that demonstrate the need and use of these technologies required substantial additional effort, as we need to verify that instructions are detailed and clear, and the assignments/projects are interesting and engaging to the students.

EECS5414/4414 – Information Networks (Winter 2018) – Previously listed EECS6413 (Winter 2017)
Website: https://www.eecs.yorku.ca/~papaggel/courses/eecs4414/

Information networks are effective representations of pairwise relationships between objects. Examples include technological networks (e.g., World Wide Web), online social networks (e.g., Facebook), biological networks (e.g., Protein-to-Protein interactions), and more. The study of information networks is an emerging discipline of immense importance that combines graph theory, probability and statistics, data mining and analysis, and computational social science. This course provides students with both theoretical knowledge and practical experience of the field by covering models and algorithms of information networks and their basic properties. In addition, analysis of information networks provides the means to explore large, complex data coming from vastly diverse sources and to inform computational problems and better decisions.

EECS3421 – Introduction to Database Management Systems (Summer 2020, Fall 2019, Winter 2019)
Website: https://www.eecs.yorku.ca/~papaggel/courses/eecs3421/

This course provides an introduction to the fundamental concepts of database management, including aspects of data models, database languages, and database design. At the end of this course, a student will be able to understand and apply the fundamental concepts required for the use and design of database management systems.

EECS2031 Software Systems (Winter 2018)
Website: https://www.eecs.yorku.ca/~papaggel/courses/eecs2031/

This course provides an introduction to software techniques in a Unix-style environment, using scripting languages and a machine-oriented programming language (typically C). What goes on in the system when programs are executed? Core topics include the UNIX environment, shell programming, creating and using software tools, pipes and filters, file processing, processes, system calls, signals.

There were two fundamental **challenges** in teaching this course in Winter 2018:

- The CUPE 3903 strike started sometime in the middle of the term and continued until after the course was delivered. Originally, the course had been assigned six (6) TAs. Unfortunately, out of the six (6) Tas, only one was available to help with delivering the course. As a result, additional effort was required and we ended up working extra hours to make sure that students get the best experience.
- This was the first time I was delivering this course at York University. While there was some material available from previous iterations, I made the decision to redesign and update all teaching material including slides, tutorials, assignments and a fresh-look course website.

UNIVERSITY OF CALIFORNIA, BERKELEY (2015 – 2016)

Data Science W205 – Storing and Retrieving Data (Fall 2015) – Graduate Course, Delivered Online, School of Information

Storing, managing, and processing datasets are foundational to both applied computer science and data science. Indeed, successful deployment of data science in any organization is closely tied to how data are stored and processed. This course introduces the fundamentals of data storage, retrieval, and processing systems. As these fundamentals are introduced, exemplary technologies are used to illustrate how storage and processing architectures can be constructed. This course aims to provide a set of "building blocks" by which one can construct a complete architecture for storing and processing data. The course will examine how technical architectures vary depending on the problem to be solved and the reliability and freshness of the result. The problems are being considered in the context of data analytics. The course considers traditional architectures as well as so-called big-data architectures. Students consider both small and large datasets because both are equally important, both justifying different trade-offs. Exercises and examples consider both simple and complex data structures, as well as data ranges from clean and structured to dirty and unstructured.

UNIVERSITY OF TORONTO (2010 – 2015)

APS105 – Computer Fundamentals (Fall 2010), Electrical and Computer Engineering

This course is designed to give an introduction to computer science with emphasis on the development of tools for problem solving in science and engineering. The course consists primarily of lectures and laboratories. Major topics covered in the lectures include the representation of information, development of good programming techniques, program organization, algorithms, and data structures. Programming concepts are introduced using the C programming language.

CSC309 – Programming on the Web (Summer 2011, Summer 2012), Computer Science

This course provides an introduction to the technologies used for developing Web applications. We discuss technologies for static and dynamic content generation, including n-tiered architectures and web services. We also discuss general Web design principles, with a special focus on usability, security and scalability.

CSC343 – Introduction to Databases (Fall 2011, Fall 2012, Fall 2013, Winter 2014, Fall 2014, Winter 2015), Computer Science

This course provides an introduction to database management systems, the relational data model, relational algebra, querying and updating databases using the SQL query language, application programming with SQL, integrity constraints, normal forms, and database design, elements of database system technology such as query processing and transaction management, semi-structured data models, querying semi-structured data (xml, xpath, xquery technologies).

CSC209 – Software Tools and Systems Programming (Winter 2012, Summer 2013), Computer Science

This course provides an introduction to software techniques in a Unix-style environment, using scripting languages and a machine-oriented programming language (typically C). What goes on in the system when programs are executed? Core topics: creating and using software tools, pipes and filters, file processing, shell programming, processes, system calls, signals, basic network programming.

APS106 – Fundamentals of Computer Programming (Winter 2013), Mechanical and Industrial Engineering

This course provides an introduction to computer systems and software. Topics include the representation of information, algorithms, programming languages, operating systems and software engineering. Emphasis is on the design of algorithms and their implementation in software. Students develop a competency in the C programming language. Laboratory exercises explore programming concepts using examples drawn from mathematics and engineering applications.

APPENDIX II: SAMPLE OF STUDENT TESTIMONIALS

This Appendix provides a sample of student course evaluation testimonials at previous institutions, including the **University of Toronto (2010 – 2015)** and the **University of California, Berkeley (2015 – 2016)**, as well as, the **York University (2016 – present)**.

SAMPLE OF STUDENT TESTIMONIALS AT PREVIOUS INSTITUTIONS (2010 – 2016)

This section provides a sample of course evaluation comments of students. Comments are grouped in a way to reflect specific properties of my teaching approach. Note that the comments have been slightly edited for typos, length or clarity purposes.

Comments Reflecting Overall Effectiveness and Quality of the Instruction

- "10/10."

- "10/10 - best professor ever!"

- "He is the best professor I have ever had. He is clear, gives amazing examples and always puts effort into answering student questions."

- "You were an awesome lecturer. Keep up the good work."

- "Was a phenomenal lecturer. Taught very well. Very knowledgeable and helped with questions. One of my favorites. The only thing I recommend is if he spends a lecture or two writing a program with the class."

- "The overall quality of the instruction in this course was excellent. The lecture slides were clear and concise, a lot of examples were provided and despite not having a lab for this course, the tutorial material was comprehensive. The assignments were interesting although the assignment instructions were a bit ambiguous at times; nevertheless, the course instructor clarified everything promptly."

- "The instructor was very good at delivering lectures. He was very knowledgeable about the subject and enthusiastic."

- "You were an awesome teacher. Thanks for making this course easy!"

- "Awesome teacher with awesome t-shirt :-)"

- "The professor is hard-working, and he is a very nice person. The course is hard but interesting."

- "Great professor. Very helpful and nice."

- "The teaching style of the professor was very organized and clear."

Comments Reflecting Availability for Assistance and Efforts to Engage Students and Provide a Supportive Learning Experience

- "Very good instructor. One of the best lecturers I have had. Great lecturer who tries to engage the class and answer all questions. Well prepared and organized notes."

- "I cannot exaggerate the quality of support that was available. I am enrolled in the engineering department, so I am not familiar with the nature of Arts and Science Faculty's computer science courses, but, this was hands down the most supportive learning environment I have had in any of my classes in all of my 4 years. The professor and TAs were understanding and helpful in many ways. They were flexible towards students' needs while also being fair towards the class. Their availability, patience, and reliability on the course discussion board was amazing. Almost any question asked was responded to within 24 hours, often by the professor himself, at virtually any hour - even past midnight. Emails were always promptly responded to, and assistance was always available both online and in person. It is solely because of this professor and his TAs that I will recommend this course to fellow students."

- "The professor was often in his office and willing to answer question (even during off-hours). Discussion board questions were answered in reasonable time frames."

- "The professor was very helpful and understanding. He went out of his way to assist me, which was very great."

- "The instructor was always available for assistance, even outside regularly scheduled office hours."

- "Instructor was sufficient source of assistance, book not required."

- "Office hours and the lecturer was always helpful."

- "The professor was extremely flexible and accommodating with office hours and responses to emails."

Comments Reflecting Attention to Detail when Preparing Slides, Explaining Concepts and Answering Questions in Class

- "Lecture slides extremely well organized."

- "Lectures are clear. Professor is great. He is patient and kindhearted to every student."

- "Excellent teaching and resources. Course was interesting and very in depth. The large assignments were a little too difficult, but also provided a good challenge on which to expand one's understanding of the material."

- "The instructor was impressively well-organized throughout. The notes provided were mostly excellent. The pace was consistent, as were the difficulty and length of the assignments."

- "Explanations were excellent and very helpful."

- "Great course! He is a great instructor. Nice person overall. He cared to make sure students understand course concepts."

- "Well thought out lectures, organized slides, excellent attention to student questions. Great lecturer."

- "Very carrying instructor. Always ensures thorough understanding."

- "Good job from the lecturer. It helped me understand computer programming without having any background in it."

- "A very enthusiastic teacher that taught programming in a very interesting way. He handled questions in class with a high level of patience."

- "Concepts explained clearly. Uses good examples."

- "I liked how concepts were explained through the use of examples."

- "Very helpful answers to questions."

- "He is very clear, and his lecture slides are precise and helpful."

SAMPLE OF STUDENT TESTIMONIALS AT YORK UNIVERSITY (2016 – PRESENT)

This section provides a representative sample of student testimonials. For consistency, they are organized by the **list of evaluation criteria** considered by the Lassonde's Faculty Teaching Award Committee (as listed earlier in the **Evidence of Teaching Excellence** section).

RE: Demonstrates Pedagogical Innovation

Student testimonials **regarding EECS6414**:

- "This course was very relevant to the industry, especially those pursuing a career in Data Science. What I liked the most about this course was that it was project-based, and we were given the freedom to come up with our own project proposals. Then the Professor gave very valuable guidance throughout the course to improve the outcome of our course project. Also, the instructor thoughtfully planned and delivered lectures on network analyses and visualization, which were very helpful. So far my favorite course at York!"

- "Prof. Manos Papagelis spent a lot of time to choose and prepare lecture topics. He explained the concepts very clearly. He has deep knowledge on the subject matters, including state-of-the-art techniques and research on Machine Learning, network analysis, and visualization. He took a great deal of time to find and bring up very valuable insights to his lectures. He was very approachable and friendly. He gave everyone who asked questions a plenty of time to ensure that the questions are fully answered. He spent time with the students and gave them very valuable feedback on the course project throughout the term. Prof. Manos is the best instructor so far I have seen at York."

- "Instructor is knowledgeable and willing to help students with their projects. He listens to student's problem and suggest possible way forward, it is a flexible course to let student choose their interesting topic, work on a related project and present the outcome. In general, the instructor has done a great job, he does not only teach but also inspire student to learn more about visualization."

- "It was a project-based course and really gave students the opportunity to deal with real-world problems, analyze and implement the solutions and help the community back."

- "The fact that it was a project-based course provided us with freedom to work on the kind of projects we enjoy doing hence bring happiness to us while working."

- "The flexibility in choosing the project of interest and the way we leveraged the tools we learnt to work on our interest."

- "Instead of homework assignments and exams, this course requires students choose and complete a suitable course project and use it for evaluation of learning outcomes. This is an excellent method of learning the real-world knowledge and methods."

- "The topic of the projects where so diverse that students can learn a lot from the experience of their classmates."

- "For the project selection, presentation and paper submissions, he gave us encouraging ideas (especially for post-midterm deliverable) and showed flexibility to be more productive & focused till the end."

- "The course was project-based and gave me insight about my research."

- "The focus was on learning and not grades."

- "The course was very interesting, I would say #1 in my CS. I really liked the "Group Project" aspect of the course. The group project really provided us with the opportunity to develop, design and make test our learning. I feel CS and Eng students lack communications and presentation skills, and thus the presentation part of the group project was an excellent thing that prof added. It provided students with the opportunity to present their projects in front of the class and I really enjoyed listening to group projects it provided me many insights. Overall, the course was simply GREAT!"

- "The open-ended project was a great addition to the course as it allows students to express their ideas and apply what they learned towards something they want to work on."

Student testimonials **regarding EECS4415**:

- "The open-ended nature of assignments and projects. The work I did was highly relevant to the career path that I'm pursuing."

- "Projects are interesting"

- "The project was also really exciting to work on!"

Student testimonials **regarding EECS3421**:

- "This course has given me intensive knowledge that i enjoyed learning. And Professor Manos was the best at explaining it. I thoroughly enjoyed this class because of how the professor delivered the course. I will gladly take the following year Database course with Manos if he is teaching it."

- The professor was a great teacher and explained things very well."

- "Prof really has patient to answer all the questions during the class, and response the question as soon as he can, which is been so helpful."

- "Prof Manos truly cares about students and hence makes sure everyone is getting the most out of it. Assignments were very helpful to learn the material. The best thing was that I found this course very practical and related to the industry."

- "I really liked the way the prof teaches this course. He made the content really easy to understand. The best thing about the prof is that he always recaps previous lectures in class before starting the new lecture."

RE: Introduced New Curricular Content / Course Design / Curriculum Development

Student testimonials regarding **new offering of EECS6414**:

- "Course covers broad data analytics and visualization perspective with examples of real-world problems. Contents of course are really interesting and helpful from raw data to better visualized system."

- "The course content and schedule were perfect. The class was fantastic. The class material was splendid. I really enjoyed this class."

- "The instructor was very clear and helpful throughout the course."

- "Term-wide project allowed us to research interesting and relevant topics on our own time. Working on the projects gave us valuable knowledge and practical hands-on experience. The course material supplemented this as well, and the various technologies and techniques learned gave us valuable insight towards our project."

- "The best thing about this course is how the professor taught all the things in such a small span of time."

- "The Professor's delivery of content was one of the best experiences. He is very relaxed, clear in explaining the content and very patient in answering questions."

- "He always ensured that all the relevant things were covered."

- "The best thing about the course is its relativeness with the real-world scenarios."

- "Project-based, application-oriented course. Students give full play to their creativity, even the ones that are not from the CS program. Projects are all interesting and attractive, some of them use trivial data like paper references, but unveil patterns that we don't think of until we see it."

- "Very helpful and practical industry-focused course."

Student testimonials regarding **new offering of EECS4415**:

- "Should be offered every year."

- "I would genuinely say that out of the four years I've been at York, this was one of the best, if not *the* best, course that I've ever had."

- "I would want to make this course as mandatory to make other students get this incredible knowledge about big data."

- "Very good course, learned a lot of useful skills, definitely recommend this course to others."

- "It's a GREAT course for people who want to get more exposed into data sciences/analytics and pursue a career in it."

- "Take it."

- "Best course!"

- "The course was very interesting and helped gain a lot of practical knowledge."

- "This course is very good."

- "Very nice course."

- "Amazing opportunities to learn and grow. Very challenging material and assignments, but I came out of it with a much better grasp of big data systems."

- "I really appreciated that we got to use relevant and modern technologies (Python, HDFS, Docker, Twitter API, Apache Spark, etc.) for our assignments and that we got to learn about them in class. The project was also really exciting to work on!"

- "This course provided us with a clear picture of how big data works. This course exposes us to the real-industrial approaches in Big Data systems. It was the most practical course that I have taken so far in my Undergrad career."

- "The course was organized with in such a way that improved learning for me. The weekly readings helped us prepare before the lectures and helped understanding the concepts better. The Programming assignments were closely related to the content and gave the student to take their own approach in answering the questions. Additionally, after the class there was a tutorial organized to teach the students how to use all the tools and the software to complete the assignments. For students who had no prior background in python, the tutorials were very helpful as they get to practice python before the programming assignments were assigned."

- "We covered a lot of technologies and got a good overview of big data systems, as well as some practical experience. I liked the choice of papers that the Professor had us read, they were all interesting and informative."

Student testimonials regarding **updated offering of EECS3421**:

- "The assignments were very interesting and challenging. Also, the professor valued our efforts and provided extensions."

- "The relevance to real work technology was incorporated into this course. Interesting examples made it easy to see why this course is important."

- "The course material itself is interesting and dynamic. It is directly relevant to real-world applications and has potential for a lot of practical examples."

- "The material covered in this course was very interesting. The assignments and the way they were set up was perfect. They helped me truly practice what I was taught in class. Excellent Job! I enjoyed the class."

RE: Demonstrated Exceptional Use of Technology

Sample of student testimonials **about use of new technologies**:

- "The COVID-19 situation was handled very well, all lectures and presentations continued as planned."

- "This course teaches about Data Analytics; it guides students on how to analyze and process data effectively. This course also includes lectures about visualization which is important for graduate students. We learnt how to organize the results in the right visualization type to achieve optimal effect."

- "I really appreciated that we got to use relevant and modern technologies (Python, HDFS, Docker, Twitter API, Apache Spark, etc.) for our assignments and that we got to learn about them in class."

- "One of the best things about this course is the type of technologies that we learnt."

- "The best part about this course are the technologies that the professor together with TAs were able to teach us and make us use. Through comprehensive tutorials, I was able to clearly get the concepts and understand how to use the software. Plus, the software is currently used in industry, which will look good on resume."

- "The study of big data technologies and their applications to the world."

- "Thank you for teaching us new technologies!"

- "Insight into technologies for performing analytics on big size data and tools to represent the results."

Sample of student testimonials **about course Website and Piazza QA**:

- "I also am a huge fan of piazza over Moodle as a course communication platform/message board. Moodle is clunky and slow and just not user-friendly. Piazza is much more robust and allows greater control over what you can post. I think more and more professors should utilize Piazza."

- "Piazza was very very helpful."

- "Great course website!"

- "His website made it very easy to navigate through the necessary material for the class"

- "I like how he made his own course webpage, rather than just relying on Moodle, or Learn Lassonde. There are some other profs who also make their own course webpage, but Prof. Manos' webpage was very exceptionally made. Demonstrates how passionate he is in teaching."

- "He also made an interactive forum between students and prof for whenever you can ask questions, which was very well utilized by the class."

- "All of the question can be response in 20mins on piazza, the course instructor do a lot of work on the slides and piazza system help student solve a lot of problems. And the assignment also helped us a lot."

- "Piazza provide a lot of communicate chance and everyone can share idea with others."

- "The prof's feedback on Piazza. I am super grateful for the help they provided and that they replied quickly."

RE: Classroom Instruction / A Focus on the Student and Their Experience/ Exceptional Performance in the Classroom / Is Committed to, Continuous High-Quality Teaching / Innovative Teaching Methods

Student testimonials **regarding EECS6414**:

- "The prof. was so knowledgeable and willing to help students. He did his best to keep the material and learning environment entertaining and interesting."

- "This is a project-based course and the milestones of the project are very clear. The feedbacks provided by the instructor are detail and helpful."

- "Manos is very dedicated instructor and makes extra effort to address projects."

- "He is really clear in explaining concepts and he is always available to help."

- "Great instructor."

- "Data analytics and visualization is a broader area. I really liked the way professor covered different aspects of it. All the content that was taught was very well explained and demonstrated."

- "Instructor is hardworking, approachable, understanding and quite knowledgeable about his area of research. I had an opportunity to come across some interesting topics and methods to handle big-data and understand the contribution of human-factor for the

analysis and visualization of information presented during the lectures. Overall, it never let me feel bored or distracted. For the project selection, presentation and paper submissions, he gave us encouraging ideas (specially for post-midterm deliverable) and showed flexibility to be more productive & focused till the end."

- "Instructor Manos Papagelis is awesome, he provides great feedback and is a really nice guy. He was able to provide some good insights even though the project I worked on was not his specific area of research."

- "Personally, he is very decent, and he does keep in touch and follow-up our progress closely."

- "Now I am attending my fifth graduate program in Canada and in the United States. I have already obtained MS degree in computer science from Chicago. My perception is that Prof. Manos Papagelis is excellent in designing the course, delivering lectures, guiding the projects, except I am not sure how he is going to measure outcomes."

- "The instructor was so helpful and flexible that made doing a huge project enjoyable."

- "The professor is very supportive."

- "Professor Papagelis is a very good lecturer. Due to the diverse group of students, the material presented was largely unfamiliar to most people in the class. To accommodate for this, Professor Papagelis often made recaps of the earlier lectures and tied various themes together. In addition, more resources were made easily available on the course webpage for those who were interested. Structuring the course work around the project was also great in my opinion. I got a chance to work on a problem that was not directly related to my Ph.D. research and learned a lot along the way."

- "I liked the project-oriented approach. The level of freedom in deciding the project modules. Great feedback given by the prof."

- "I like the fact that this course is project oriented which made me focus on my research even more."

- "We can explore our own ideas, select things that are related to the course and our own interest, learned a lot."

- "Clear and engaging. Obviously passionate and interested in the subject and it comes through in his teaching."

- "I liked the way the professor taught the course with enthusiasm and kept the students engaged in the class."

- "Manos is a very open minded, supportive and knowledgeable professor."

- "Great instructor. Well-experienced and always ready to help."

- "The instructor was really great and helpful even outside the class. When we contacted him for project meetings, he was available and provided valuable feedback."

- "Professor Manos is extremely supporting regarding the project in this course."

- "Manos is a very caring, knowledgeable professor."

- "Prof Manos is very helpful and knowledgeable."

- "Instructor was really cooperating and understanding when it comes to delivering lecture or clearing doubts."

- "Professor Papagelis was very helpful, gave lots of useful advice, was always available for meetings and responded to all requests."

- "Professor Papagelis is willing to help students no matter when. Students are always welcome in his office."

- "He was amazing."

Student testimonials **regarding EECS4415**:

- "One the best instructors I've ever had. Very knowledgeable in this field of Big Data. The course content, assignments, projects, readings, piazza posts everything was very helpful. TA's were very helpful and experts in the field too. This course should only be taught by him and I encourage the Professor to propose more courses like these to the department."

- "Incredible instructor. He was always willing to help with assignments and the project, as well as take time explaining difficult concepts again."

- "Best instructor I ever had in York University Taught us a lot of interesting Big Data tools and made us to read interesting articles."

- "Great professor."

- "Professor Papagelis is extremely knowledgeable. He clearly explained the material in the lectures through examples which I found very useful."

- "You're awesome. Keep up the good work!!!"

- "Highly available instructor."

- "Just great! Very clear and always available to explain things!"

- "The instructor did a great job at teaching the concepts. I was always attentive in the lectures due to his style of teaching. Very approachable and helpful."

- "I would genuinely say that out of the four years I've been at York, this was one of the best, if not *the* best, course that I've ever had."

- "Without a doubt, the best thing about this course is Prof. Manos. He is such a gentle and caring person and genuinely cares about students' success. Prof Manos made himself available to answer any questions and clear students' doubts. He was very understanding when deadlines were approaching, and I really liked his idea of "Grace Days" and "Group Project". I wish prof Manos teaches more courses, I always enjoyed his lectures and found them very valuable for my career. On top of this prof always gave us good advice about the career and made the course very practical and hands-on."

- "Very helpful when students had problems. His average response time on the forum was 12 minutes in some of my other classes ive had to wait days to get answers to my questions. The course touched on real world challenges and solutions versus the outdated material that is taught in a bunch of other classes."

- "Manos is a gem. Amazing teaching style, very helpful and considerate!"

- "Professor Papagelis always explains things clearly and provides the lecture slides ahead of time, a huge plus. The lectures themselves are very organized, and the Professor is willing to provide more explanation whenever necessary."

- "The professor is deeply passionate about his field and can actually develop interest in students to learn more. He goes over things multiple times till the concepts are clear and provide additional help if needed. This is my second course with Professor Manos, and I will definitely take more 4th year courses with him if offered."

- "Very polite, and accommodating. Learning materials are covered comprehensively."

- "Professor Papagelis was an excellent instructor who provided a reason and motivation to everything covered in class. The assignments and course project though sometimes challenging, were all relevant to the course and computer science as a whole."

- "The instructor is great at delivering lecture in a clear and concise manner. Furthermore, he encourages questions from students and answers them in a detailed manner."

Student testimonials **regarding EECS3421**:

- "Replies to emails promptly and always there to help and answer all your queries. Would definitely take another course with the professor again in the future."

- "One of the best professors I have had so far as a computer science student. Very fair and considerate towards the learning environment and experience of the students."

- "The instructor was amazing; he did amazing job at teaching the material he's very well prepared and he knows the material very well and extremely helpful to students."

- "This professor explained difficult concepts very clearly. He was always available and very helpful in his office hours. He also graded marks very fairly, and the assignments in this course made me learn the most of any course I have taken this semester since they were very relevant to the course and were interesting."

- "Professor Manos is the best EECS prof I've had so far. He is passionate about the material he teaches, knows how to lecture and teach students while keeping them engaged. Goes through amazing examples in class and takes the time to ensure everyone understands the content rather than just blasting students with nonsense and praying they understand. Assignments he gave were well structured and explained in class and we're directly related to the content covered in class. The midterm was rigorous, but questions were directly related to material taught in lectures and if you took notes you didn't even have to touch the textbook. We were only examined on everything he said or mentioned and weren't expected to know random stuff that has never been discussed in class. By far the best prof in the EECS department."

Manos Papagelis – AUG'20

- "Course content is extremely useful, professor is great, patient, willing to answer questions."

- "The best things are how much the professor is prepared for each lecture. He does not just read through the slides. He comes prepared and make sure the students understand the content."

- "The slides are easy to understand, they get to the point, and provide a decent number of examples. Interesting topics such as sql injection are covered."

- "Professor Manos is an amazing professor. He is very clear with his lectures, and his assignments are well thought out which helps us to learn more about the course content."

- "Well organized course materials and lectures. Fast feedback to our questions online."

- "Manos is incredibly knowledgeable about databases and will enthusiastically answer all questions."

- "Giving an example first before introducing or explaining a difficult concept was different which I found very effective."

- "Good organization and presentation of the course allowed me to learn content well. We were always taught all necessary background information about a topic before we dive into it."

- "He is a very friendly instructor, and always welcomes questions. He knows what he is talking about and you can tell he is very knowledgeable in the subject he is teaching which allows him to always answer questions as well. Additionally, he always responds to questions sent outside of class through email for example, very quickly. As a 3rd year computer science student, I have found that there are very few professors who are friendly, knowledgeable and is able to actually teach and Professor Manos is one of them."

- "Just phenomenal overall."

- "Great Professor, hope to take future courses with him."

- "Excellent professor. Very knowledgeable, helpful and ensures students who make the effort to learn, learn."

- "The Instructor is very very helpful and explains the material discussed in the lectures very well."

- "Very good professor, always open to questions and explaining."

- "Very knowledgeable and passionate about the material. Easy to follow and understand. Always willing to take questions and help students."

Student testimonials **regarding EECS4414**:

- "Great prof; did an amazing job at making the content understandable given that this is a new course."

Student testimonials **regarding EECS2031**:

- "Professor Manos is extremely knowledgeable of the course material which helps greatly in the teaching process. He is very receptive to student needs and questions and is very friendly and approachable during office hours. He responds thoroughly and promptly after-hours on Piazza."

- "He is one of the best profs so far."

- "The instructor did a good job of teaching the course because the instructor explained to me clearly about the C programming languages, Shell programming languages, and Unix. The instructor made sure that students including me understand the course materials clearly before moving on to the next course material."

- "Amazing."

- "The instructor was great."

- "Professor Manos has been an incredible teacher, always been helpful and ready to answer questions."

- "Great instructor. Caring about students and willing to help."

- "The instructor was very much interactive with the students."

- "Professor is very good and helpful. Always prompt at answering questions. Gave plenty of time to complete assignments."

- "This instructor is the best for this course since he explained these concepts very well and clearly! He always takes his time and effort to help students to become successful in this course. He is very responsive in emails and online forum (Piazza) and mostly answer all students' questions about assignments, tests, etc. He is very friendly and approachable. I would say this instructor is the best professor to teach this course since this course is not easy to learn – a lot of efforts and understanding, and he make things very easy."

- "The instructor is great. I would rank him as one of the top 3 Professors in EECS Department. Very helpful."

- "Very good in teaching. I just wish you can be my prof again for my fourth-year data classes."

RE: Ability to Stimulate Critical and Analytical Thinking in Students / Ability to Create an Engaging and Rewarding Learning Experience

Student testimonials **regarding EECS6414**:

- "Amazing Professor. Very clear in the lectures and was always available to help. Gave great direction and insight when we asked about our projects."

- "Professor Manos Papagelis is very nice, helpful, encouraging and inspiring. He provided lots of materials for us to learn and think of our projects."

- "I liked that the instructor clearly cared about the students' success and involvement in the class."

- "One of the other aspects which I liked about this course was the breadth of the content coverage. Everything Professor taught us was very relevant, applicable and also provided us to learn many new things."

Student testimonials **regarding EECS4415**:

- "Learning how big data works and how it affects the world."

- "The course material is both practical and relevant to my course and my future as a computer scientist. The assignments along with the material covered in lecture will help me in my future careers and any computer science endeavors."

- "Through this course, I developed an understanding of what was the problem of analyzing and dealing with large datasets that the companies (like Facebook, Google, Twitter, Yahoo, etc. were facing). How their solutions incrementally built or complemented one and the other. Overall, I really enjoyed reading the research papers assigned in this course. I believed it has broadened my understanding of the big data world."

- "The professor explains things very well in an entertaining way and makes sure the labs and project are very relevant. I love that it is using modern tech that is useful and relevant for getting a job."

- "I now want to learn more about the other subjects related to big data such as machine learning and data mining. I'm very sure this is because of the way the instructor teaches and presents this course."

- "I would recommend this course to other computer science students."

- "Was a great 4year eecs course. It was a pleasure."

- "Everything about instructors teaching method is great. Always happy to help out a student, after the class, during the class and even on the short breaks between the classes! And I loved the fact that the students could pick the topic of their final project! Really demonstrates a 4th year course experience!"

Student testimonials **regarding EECS3421**:

- "Professor Manos is a great instructor. I particularly enjoyed how he spent time to explain the material. He further provided opportunities for students to ask questions and answered them as best as he could. He managed to create an excellent learning environment for me, and I commend him! I look forward to picking another class with him next term."

- "This instructor has an excellent work background to teach both this course and the fourth-year course that comes after it. His thoughts on the subject are energetic and engaging and his students are lucky to have him."

- "The instructor explained the course very well and always spared time for questions and went over topics over and over again when students did not understand it. He really spends his time making sure students understand the subject. He explains the assignments clearly as to what they're asking. He is one of the best EECS professors, he has made this course very interesting and fun to learn and I would gladly take the succeeding 4th year database course with him if he teaches it."

Manos Papagelis – AUG'20

- "Instructor seemed to really care about whether the student learns something from the course. He is very knowledgeable in the subject he teaches and is really good at explaining the topics where his examples help immensely."

- "Very interesting and thought-provoking assignments, which related to the course material and midterm. By having a good understanding of anything one thing it was easy to learn other parts of the course."

- "Learning how to interact with Databases and the Theory behind it was very enjoyable. My favorite part of the course was being able to work on projects in code with embedded and interactive SQL."

- "This course has given me intensive knowledge that i enjoyed learning. And Professor Manos was the best at explaining it. I thoroughly enjoyed this class because of how the professor delivered the course. I will gladly take the following year Database course with Manos if he is teaching it."

- "The professor was a great teacher and explained things very well."

- "Prof Manos truly cares about students and hence makes sure everyone is getting the most out of it. Assignments were very helpful to learn the material. The best thing was that I found this course very practical and related to the industry."

- "The best thing about this course is that it teaches the basics of using a database which is extremely useful in other courses and jobs. Even though this is an introductory course the material that was taught have significant impact on my future."

- "It was taught like how an intro course should be taught. I got from this course everything I intended to. I wanted to learn about RDMS and how to use them and that's exactly what I got out of the course."

- "The professor was amazing. Taught industry-standard content that isn't outdated like what some of the other professors teach. Very applicable assignments that provide thorough hands-on experience to solidify concepts taught in lectures."

- "Teaching me how to design and make a database by myself."

- "I have had Professor Manos Papagelis before for Software Design (EECS 2031) and he was a delight instructor to have. The professor always explains the materials in a clear manner, and I have no hesitation to ask the professor questions (even it's a silly question). The professor is understanding and is always willing to help out the students and is also clear about what he is expecting from assignments and examinations."

APPENDIX III: SUMMARY OF COURSE EVALUATIONS

This Appendix provides a summary of my course evaluations at previous institutions, including the **University of Toronto (2010 – 2015)**, the **University of California, Berkeley (2015 – 2016)**, as well as, the **York University (2016 – present)**.

SUMMARY OF COURSE EVALUATIONS AT PREVIOUS INSTITUTIONS (2010 – 2016)

The table below provides a summary of my course evaluations. The score reported is the average score on **the overall instructor effectiveness question** of the evaluation forms, over all the times I taught the same course. As the rating systems can vary by institution, I provide a normalized score (out of 100%) for comparison purposes. **Detailed course evaluations are provided as separate files.**

ACADEMIC INSTITUTION	COURSE CODE	SEMESTER	TOTAL STUDENT ENROLMENT	NORMALIZED SCORE (100%)
University of Toronto	APS105/APS106	F10, W13	215	**82.5%**
University of Toronto	CSC309	S11, S12	121	**67.5%**
University of Toronto	CSC343/CSCC43	F11, F12, F13, W14, F14, W15	1022	**77%**
University of Toronto	CSC209/CSCB09	W12, S13	139	**78%**
University of California, Berkeley	Data Science W205	F15, W16, S16	90	**72.5%**

SUMMARY OF COURSE EVALUATIONS AT YORK UNIVERSITY (2016 – PRESENT)

The table below provides a summary of my course evaluations. The score reported is **the overall instructor effectiveness question** of the evaluation form, for each course I taught. As the rating systems can vary by institution, I provide a normalized score (out of 100%) for comparison purposes. **Detailed course evaluations are provided as separate files.**

ACADEMIC INSTITUTION	COURSE CODE	SEMESTER	TOTAL STUDENT ENROLMENT	RESPONSE RATE	MEAN SCORE (OUT OF 7)
York University	EECS6413	W17	3	66.7%	7.00/7 (**100%**)
York University	EECS6414	F17	18	66.7%	6.25/7 (**89.3%**)
York University	EECS4414	W18	6	33.3%	7.00/7 (**100%**)
York University	EECS2031	W18	122	17.21%	6.50/7 (**92.9%**)[3]
York University	EECS4415	F18	38	60.53%	6.65/7 (**95.0%**)
York University	EECS3421	W19	91	46.30%	6.51/7 (**93.0%**)
York University	EECS6414	W19	24	58.33%	6.14/7 (**87.8%**)
York University	EECS3421	F19	98	47.96%	6.32/7 (**90.3%**)
York University	EECS4415	F19	44	63.64%	6.61/7 (**94.4%**)
York University	EECS6414	W20	37	67.57%	6.48/7 (**92.6%**)
York University	EECS3421	S20	117	50.43%	6.54/7 (**93.4%**)

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[3] Due to a CUPE3093 union strike, scores are available for course-level only questions. Instructor-level comments can be found as student testimonials.