Teaching Portfolio

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Department of Computer Systems Technology (CST)
New York City College of Technology
(Fall 2012 – Spring 2018)

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A. Biography

Dr. Ashwin Satyanarayana is currently an Associate Professor with the department of Computer Systems Technology, New York City College of Technology (CUNY). Prior to this, Dr. Satyanarayana was an Applied Research Scientist at Microsoft from 2006 to 2012, where he worked on several big data problems including query reformulation on search engine Bing. He holds a PhD in Computer Science (Data Mining) from SUNY, with particular emphasis on Big Data Analytics (BDA), Machine Learning and Applied Probability with applications in real world learning problems. He is an author or co-author of over 25 peer reviewed journal and conference publications and co-authored a textbook – "Essential Aspects of Physical Design and Implementation of Relational Databases." He has four patents in the area of search engine research, is a recipient of the Indian National Math Olympiad (INMO) award, and is currently serving as Chair-Elect of the ASEE (American Society of Engineering Education) Mid-Atlantic Conference.

B. Teaching Responsibilities:

1. Departmental Overview:

The Computer Systems Technology Department offers two degree programs: AAS in Computer Information Systems, and Bachelor of Technology (BTech) in Computer Systems. The department also offers a variety of computer courses for students in other curricula. Some of these courses are designed for students in specific majors such as accounting, telecommunications technology or legal assistant studies, while some are intended to provide computer literacy to students in any major. I have been associated with the department since I began teaching in Fall 2012.

See Course Listings.

I am the course coordinator for two senior level courses (CST4714: Database Administration and CST4704: Business Intelligence, Data Warehousing and Data Mining) in my department. In this role, I have incorporated Data Mining concepts into an existing course (CST4704) and I am responsible for coordinating the professors teaching these courses each semester. This includes keeping course materials up to date, distributing course materials to other professors, and meeting with and answering questions as needed by other faculty. One of the main goals of this process is to maintain consistency and adherence to the approved curriculum.

As chair of the database track (one of four tracks offered to our BTech students), I am involved (with Prof. Hong Li, Prof. Elizabeth Milonas and Prof. Elena Filatova) in developing a new BS (Bachelor of Science) degree in Data Science which involves developing the curriculum map, creating new courses, writing the proposal document and meeting with other department faculty. As part of this new degree, I have developed two new courses titled: Data Mining and Machine Learning.

2. Courses taught:

a) Computer Systems Technology Courses:

CST4714: Oracle Database Administration

(*Taught in Spring 2015, Spring 2016, Spring 2017, Spring 2018, Fall 2018*)

Required course for BTECH degree program (Database Track, IT Operations track).

(2 class hours, 2 lab hours, 3 credits, maximum enrollment 24)

Description: Students in this course will develop a fundamental understanding of the tasks and issues associated with database administration including planning, building, tuning, trouble shooting, securing and monitoring databases. Students will learn how to manage users, privileges, and resources, implement basic backup and recovery procedures and identify tuning opportunities.

CST4704: Business Intelligence, DataWarehousing and Data Mining

(*Taught in Fall 2014, Fall 2015, Fall 2016, Spring 2018*)

Required course for BTECH degree program (Database Track).

(2 class hours, 2 lab hours, 3 credits, maximum enrollment 24)

Description: A general introduction to the design of data warehouses and data mining. Students learn the dimensional models and apply them to data warehouses for different business applications. Topics in data mining will range from statistics to machine learning to database, with a focus on analysis of large datasets. Data preparation, classification, prediction, associated rule mining, and clustering will be covered with a focus on applications to large real world data.

CST3504: Design Of Microcomputer Databases

(*Taught in Spring 2016*)

Required course for BTECH degree program (Database Track).

(2 class hours, 2 lab hours, 3 credits, maximum enrollment 24)

Description: This course is an overview of the database design process in the context of the System Development Methodology (Life Cycle). The three main phases in database design are covered: conceptual, using Entity Relational Diagram (ERD) and Unified Modeling Language (UML); logical, using the relational model; and physical, using a Database Management System (DBMS).

CST1204: Database Systems Fundamentals

(*Taught in Spring 2013, Fall 2013, Spring 2014, Summer 2016, Summer 2017, Summer 2018*)

Required course for AAS and BTECH degree programs

(2 class hours, 2 lab hours, 3 credits, maximum enrollment 24)

Description: This course will introduce students to ANSI standard Structured Query Language (SQL). The course will cover the various syntaxes that governs this language. In-depth discussion and practice will be given so that students will be able to manipulate (insert, update, delete, and retrieve) data in a relational database.

b) CUNY Graduate Center Courses:

CSc 79000: Information Retrieval

(*Taught in Fall 2017*)

Elective Course for doctoral students for Computer Science students at graduate center

(3 credits, maximum enrollment 10)

Description: This course will discuss fundamental problems in Information Retrieval (IR) such as building blocks of search engine systems and a wide coverage of many IR applications (Personalized recommendation, Online advertising). The students will get hands-on experience by developing practical systems/components. It will prepare students for doing cutting-edge research in information retrieval and related fields which will open the door to job opportunities in IT industry.

CSc 80020: Computer Science Research

(*Taught in Fall 2018*)

Elective Course for doctoral students for Computer Science students at graduate center

(3 credits, maximum enrollment 12)

Description: The main purpose of this course is to allow reasonable number of credit hours for a student to work on his/her Thesis research. This course will be conducted flexibly, with the ultimate goal of having each of the registered students working on his/her thesis related research project for a minimum of 80 hours a semester. The evaluation metrics include extensive literature survey, production for conference and journal papers, publishable research work, and project results being ready for submission. Most importantly, all the research efforts have to be related to and helpful for the student's thesis work.

c) Learning Community Courses: Learning Communities (LC) is a group of students who enroll in two or more courses, generally in different disciplines that are linked together by a common theme, in an academic semester. LCs is one of the ten high-impact educational practices recognized nationally to improve student persistence using data from assessment to increase retention. As part of the learning community since Fall 2013, I teach CST 1100 along with CST 1101 (Prof. Candido Cabo) and ENG 1101 (Prof. Donna Blain)

CST1100: Introduction to Computer Systems

(*Taught in Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018*)

Required course for AAS and BTECH degree programs

(2 class hours, 2 lab hours, 3 credits, maximum enrollment 24)

Description: An overview of machine architecture, software development, software engineering, data organization, ethics, computer security, and the theory of computing. The course will cover algorithms – the introduction to computer programming – and historical and evolutionary developments of computers. Individual lab assignments and team projects will require Microsoft Office applications to create Word documents, charts (Excel), presentations (PowerPoint), and manipulation of databases (Access).

d) Interdisciplinary Course: "Machine Learning for Physics and Astronomy", an interdisciplinary course was developed and taught in collaboration with Dr. Viviana Acquaviva from the Physics Department. This course was successfully taught for the first time in Spring 2018.

PHYS 3600ID: Machine Learning for Physics and Astronomy

(*Taught in Spring 2018*)

Description: The course focuses on modern problem solving in Physics and Astronomy through statistical inference, machine learning algorithms and data mining techniques. Students will be presented with data sets

and research problems in different areas of physics (particle physics, geophysics, astrophysics, condensed matter physics) and will learn how to formulate solutions by building their own toolbox, including Bayesian statistics, Monte Carlo sampling, regression and classification algorithms, clustering, dimensionality reduction, data visualization, and data cleaning. The programming assignments will be carried out in current, flexible languages, such as Python.

C. Teaching Philosophy:

"The mediocre teacher tells.

The good teacher explains.

The superior teacher demonstrates.

The great teacher *inspires*."

- William Arthur Ward

A quality teacher is one who leads by example, inspires students to expand their understanding of the world, and encourages all levels of students to succeed. Through my academic and industry career I have been blessed with many excellent instructors and mentors. By becoming a teacher myself, I can honor them and give something back.

I believe classroom instruction, especially in my field of Computer Systems, is training for what the students will find in the working world. For students to survive this ever evolving marketplace that expects greater creativity and productivity in less time, they need to be able to be encouraged, have a solid foundation, and demonstrate active learning:

1. **To encourage students to foster their own sense of curiosity and to build and strengthen strategies for satisfying this curiosity through the process of scientific inquiry**. I believe that students should become their own best teachers by learning which strategies best help them process and critically analyze new information. The teacher's job has been done well if they leave students with more questions than answers, but these questions should be self-driven and the students should be excited to pursue the answers through the process of self-enlightenment.

2. **To create a foundation for future interactions that is built on mutual trust and respect**. Students should be informed that they are cared for deeply and be regularly reminded that their individual successes are of topmost priority. This means the professor should be willing to spend a great deal of time meeting with students one-on-one outside the classroom and assessing the student-instructor communication by both the frequency of these outside meetings and the conversations these meetings inspire. To further build the students' trust, clear expectations should be defined both at the beginning of each class, as well as several weeks prior to the due date of any major assignments. Students should be encouraged to complete assignments early and take advantage of meeting with the professor to discuss whether or not their current draft meets the stated expectations. Finally, I believe that the professor should try to respect the time and effort that students put into their assignments by providing detailed feedback about point reductions and, more importantly, what they have done especially well and how they can hone these strengths to improve their performance on future assignments.

3. **To demonstrate, not just teach, the process of active learning**. I believe that breaking down the instructor's thought process into a series of discrete steps will help the students

grasp concepts in a logical manner. For example, the instructor may explain: (1) how curiosity drove their current line of questioning, (2) what data led to form the instructor's hypotheses, (3) how to test the hypotheses against new information, and (4) how this process helps form the instructor's own conclusions. The instructor may then stress that this is an iterative process, which means that the conclusions are fluid and can change as new information is acquired from different perspectives. As part of this last step, students should be encouraged to discuss potential counterarguments that may alter the professor's current conclusions. This is the process of critical thinking. By itself this term has little weight with students. However, an effective teacher puts careful thought into how to translate this term into concrete strategies that allow students to succeed in critically analyzing new information.

4. Once students recognize that the instructor is not simply regurgitating facts, but presenting conclusions that are the result of careful thought and inquiry, then the instructor can take the final step**: challenging them to develop their own process of scientific inquiry**. In the beginning of the course, students should be explicitly told to write down every step of their process, from why we should care about the topic to their evidence-based conclusions about their hypotheses. A good teacher makes the conscious decision to practice and develop their teaching strategies on a daily basis, and the best teaching occurs organically only after careful thought and preparation. Since we are trying to teach our students to become their own best teacher, it is equally important that they recognize and consciously practice each step within this strategy of critical analysis until it becomes an intrinsic part of their learning process.

In summary, I find that **teaching is only effective if it is a rewarding process of self-discovery for both students and teacher**. I often find that students are fascinated by their ability to effectively support or reject their own question-driven hypotheses, and that this process often leaves them with more questions that fuel their curiosity. For my part, I take pride in watching my students' process of self-discovery, and I also gain a deeper understanding of the topic than I would have on my own.

D. Teaching Methodologies:

Teaching is a privilege. With this in mind, I have a duty to provide a complete package of academic knowledge and practical skills to my students. Given industry experience at Microsoft as an applied scientist, having "walked the walk," I am able to bring real life examples into the classroom – not just textbook examples, but the real world issues that inhabit today's work environment.

I have three primary goals and methodologies in teaching: increase the students' critical thinking ability, promote mastery of the course material, and improve writing competence. I will discuss how I have worked to meet these goals in turn.

1. **Build a community by knowing students by name:** Knowing and using a student's name during and outside of class recognizes that a student exists and is important. Learning students' names is fundamental to developing a sense of community in the classroom. I make it a point to read through the class roster before the first day of class so they sound familiar when I meet them in person. I also tend to use a seating chart (temporarily) until I am able to match names with faces. I also have the students introduce themselves on the first day of class. Finally, I greet each of my students by name when they enter the classroom and when I return homework or exams.

2. **Review fundamentals and build upon them:** Teaching, especially at the college level, should enhance the fundamentals students already possess and work to expand and further develop core skills such as writing and critical thinking. The most basic skills are often the ones students need to practice the most in order to succeed. In each of the senior courses I teach, I keep a couple of classes for reviewing fundamental concepts learned in the prerequisite courses, which have helped students to see how their mastery of fundamental skills can enable them to succeed in the current class and beyond.

   Example (CST4714): in the design process of creating an online airline reservation system (similar to expedia.com), the student should first use foundational knowledge learned from CST1204 (during their freshman year on SQL programming and Entity Relationship modeling).

   Documentation: **CD:** Teaching/AppendixD3/CST4714-Handout3-Reviewing SQL Concepts.pdf
   Online: CST4714-Handout3-Reviewing SQL Concepts.pdf

3. **Start with a question (to build curiosity); turn into an assignment (to foster learning through self-discovery):** Learning through inquiry is one of the most natural and organic forms of learning. I use *inquiry-based learning* in all my classes as I have seen that when students are confused or curious, they use that confusion or curiosity to drive their own learning. For example, in my CST4704 class, while introducing the concept of data mining, I ask the students how they think Google always "magically" corrects a misspelled query in the search box (including long last names like mine!). I give them hints to guide them along the way, until they themselves discover that it is data driven and Google is basically using prior queries along with corrections performed by users themselves (which essentially is what data mining is– mine prior data to make predictions for the future). I follow this up with an

assignment which uses data mining to find a set of new customers (using historical data) for the next target marketing campaign.

Documentation: **CD:** Teaching/AppendixD2/CST4704-Data Mining Classification Assignment.pdf
Online: CST4704-Data Mining Classification Assignment.pdf

4. **Encourage building prototypes:** As a teacher who intends to help foster creativity among students, I help students recognize how to think out of the box. It is unhelpful to show them how to make a design similar to everything else available in the market because this practice only promotes an attitude of complacency as opposed to ingenuity. I want my students to constantly push and recognize new design challenges. Creativity is available everywhere. Teaching students to recognize their own creative potential is one of the most critical tasks I will take on. I give all my classes a term project which usually involves building a start to finish prototype.

   Documentation: **CD:** Teaching/AppendixD4/CST1100 Video Prototype.wmv
   Online: CST1100 Video Prototype
   CST4714 Airline Reservation Prototype

5. **Draw parallels to the real world:** Good teaching should aim to be fun as well as educational for both student and teacher. There is nothing wrong with bringing up pop-culture if it helps to drive a point home. In fact, I find that a marriage between class concepts and references students relate to builds stronger connections and helps abstract ideas become more comprehensible. I don't believe that a teacher has to be a standup comedian to be effective, but I try to use a well-placed joke or humorous comment which helps to ease tension and move a lecture along.

   Example (CST4714): students find the online airline reservation assignment fun to work with, as it draws parallels from online sites such as expedia.com, travelocity.com, orbitz.com, etc. As part of this project, students are encouraged to use their creativity to design the database tables and the relationships between tables. They would need to make sure that their design facilitates all aspects of online airline reservations, such as: searching for flights from a source location to a destination location on a given day, register a new customer, make reservations using credit cards, sending confirmations, etc.

6. **Share my professional life with my students:** the best activity I can lead any class with is still "Show and Tell". As appropriate to a particular course or topic, I "show" my professional work and "tell" my students about my professional experiences. Having worked at Bing, nothing captures my students' attention and inspires them more than showing them search engine prototypes such as autosuggestions while typing a query. This methodology helps to maintain their attention throughout the class, and I have found that complex concepts are now easy to teach.

7. **Inject current research and foster writing articles (improves writing competence):** I always endeavor to bring current research and theory into the classroom by asking students

to write down their findings and empirical results. This is one way to show students how what they are learning is used. It can also inspire further interest in research among students.

Example: students are introduced to certain open ended research questions during the senior level courses such as CST4704 and CST4714 and they are taught and provided with software tools needed to answer some of the research questions. Some of the empirical results produced during these projects have led to student authored publications at regional (American Society for Engineering Education – ASEE MidAtlantic Section 2016), international (IEEE Canadian Conference on Electrical and Computer Engineering – CCECE 2014) and national conferences (International Conference on Information Technology ITNG 2016).

E. Teaching Effectiveness:

1. Peer Assessment of Student Teaching:

I have received the following evaluations from faculty peer observation of my teaching. Copies of the complete student evaluation of teaching summary can be found in:

Documentation: **CD:** Teaching/Appendix B1
Online: AppendixB1

Semester	Course	Observed by	Overall Evaluation
Fall 2012	CST1100	Prof. Hong Li	Very Good
Spring 2013	*Not observed*	*Not observed*	*n/a*
Fall 2013	CST1204	Prof. Xiangdong Li	Excellent
Spring 2014	CST1204	Prof. David Bellehsen	Excellent
Fall 2014	CST1100	Prof. Candido Cabo	Excellent
Spring 2015	*Not observed*	*Not observed*	*n/a*
Fall 2015	*Not observed*	*Not observed*	*n/a*
Spring 2016	CST4714	Prof. Hong Li	Excellent
Fall 2016	CST1100	Prof. David Bellehsen	Excellent
Spring 2017	CST4714	Prof. Bader Oudjehane	Excellent
Fall 2017	CST1100	Prof. Hong Li	Excellent
Spring 2018	CST4704	Prof. Candido Cabo	Excellent

Below are some quotes from my peer faculty observations:

1. **CST_1100 Fall 2014 Observer: Candido Cabo Rating: Excellent**

ORGANIZATION AND DEVELOPMENT OF MATERIAL
"The Objectives of the lesson were clearly presented. The topics were presented in a logical sequence. Prof. Satyanarayana related the lesson topics to real applications students were familiar with"

STUDENT-INSTRUCTOR INTERACTION
"Prof. Satyanarayana asked relevant questions to students, and he guided them to find the correct answers. The students' efforts and contributions were appropriately recognized."

2. **CST_4714 Spring 2016 Observer: Hong Li Rating: Excellent**

PROFESSIONAL TRAITS
"Professor Satyanarayana appeared in professional attire and spoke clearly throughout the lecture. It was clearly seen that Prof. Satyanarayana had good rapport with students. He called students by names for attendance as well as for questions reviewing previous materials."

SUBJECT MASTERY
"Prof. Satyanarayana appeared fluent and confident with the class materials, used projector to demonstrate steps to create stored procedures of database. He also wrote examples on chalk board for discussion".

STUDENT-INSTRUCTOR INTERACTION
"Prof. Satyanarayana effectively involved students in the class. He frequently asked individual students by name and gave each one opportunity to participate in discussion. All students were actively involved in class."

3. CST_4714 Spring 2017 Observer: Bader Oudjehane Rating: Excellent

SUBJECT MASTERY
"He displayed a strong presence in class and presented the material accurately, and used the appropriate terminology. The completeness and depth of the answers he provided displayed confidence that the students reacted to".

STUDENT-INSTRUCTOR INTERACTION
"Ashwin was asking the students to work on the review problems, and was calling on students by name to propose the elements of the solution. The students were creating the procedure (answer) to the question he asked. As they answered, he would type the code on his machine, projecting his screen. As the solution took shape, he took the opportunity to review and emphasized on possible or typical errors that students make."

2. Student Evaluation of Teaching:

On a scale of 1 (strongly disagree) to 5 (strongly agree), the mean of the responses are reported below. The letter "n" indicates the number of respondents, and RR indicates the Response Rate. Copies of the complete student evaluation of teaching summary can be found in:

Documentation: **CD:** Teaching/Appendix B2
Online: AppendixB2

Criteria	Fall 2012 CST 1100 (n=18, RR = 75%)	Fall 2012 CST 1100 (n=18, RR =75%)	Spring 2013 CST 1204 (n=19, RR=79%)	Spring 2013 CST 1100 (n=17, RR=74%)	Fall 2013 CST 1204 (n=19, RR=79%)	Fall 2013 CST 1100 (n=20, RR=87%)	Spring 2014 CST 1204 (n=21, RR=88%)	Spring 2014 CST 1100 (n=20, RR=83%)
1. The instructor communicated in a way I understood.	4.83	4.56	4.79	4.65	4.68	4.40	4.71	4.80
2. The instructor held my interest and attention in class.	4.50	4.50	4.63	4.12	4.74	4.30	4.48	4.75
3. The instructor took the time to explain the material when students did not understand it.	4.94	4.67	4.79	4.65	4.79	4.70	4.76	4.85
4. Students were encouraged to ask questions and were given meaningful answers.	4.94	4.72	4.67	4.59	4.74	4.45	4.81	4.70
5. Students encouraged to express own ideas and/or participate in class activities.	4.89	4.56	4.74	4.41	4.68	4.25	4.71	4.70
6. The instructor treated the students with courtesy and respect.	4.94	4.83	4.89	4.59	4.68	4.80	4.86	4.75
7. The instructor was available to students for discussions or conferences.	4.83	4.78	4.63	4.44	4.74	4.00	4.29	4.70
8. The instructor generally met class on time and held class to the end of period.	4.89	4.78	4.84	4.71	4.84	4.60	4.76	4.65
9. The instructor spoke clearly and could be heard in class	4.72	4.78	4.79	4.59	4.68	4.65	4.81	4.80
10. The grading system for the course was clearly explained.	4.94	4.78	4.68	4.59	4.74	4.70	4.76	4.85
11. Overall the instructor's teaching was effective.	**4.83**	**4.72**	**4.74**	**4.53**	**4.79**	**4.60**	**4.71**	**4.75**
12. CST Dept. Overall Instructor's effectiveness	**4.37**	**4.37**	**4.35**	**4.35**	**4.30**	**4.30**	**4.36**	**4.36**

Criteria	Fall 2014 CST 1100 (n=23, RR=96%)	Fall 2014 CST 4704 (n=20, RR=87%)	Spring 2015 CST 4714 (n=19, RR=79%)	Fall 2015 CST 1100 (n=21 RR=91%)	Fall 2015 CST 4704 (n=15, RR= 94%)	Spring 2016 CST 4714 (n=21, RR=91%)	Fall 2016 CST 1100 (n=19, RR=79%)	Fall 2016 CST 4704 (n=9, RR = 82%)	Spring 2017 CST 4714 (n=21, RR = 88%)
1. The instructor communicated in a way I understood.	4.61	4.65	4.68	4.67	4.80	4.38	4.79	4.89	4.52
2. The instructor held my interest and attention in class.	4.52	4.55	4.47	4.62	4.67	4.29	4.58	4.89	4.52
3. The instructor took the time to explain the material when students did not understand it.	4.70	4.60	4.47	4.67	4.87	4.38	4.79	4.89	4.48
4. Students were encouraged to ask questions and were given meaningful answers.	4.61	4.75	4.53	4.71	4.93	4.38	4.68	4.89	4.67
5. Students encouraged to express own ideas and/or participate in class activities.	4.48	4.55	4.58	4.67	4.73	4.33	4.74	4.89	4.57
6. The instructor treated the students with courtesy and respect.	4.70	4.85	4.58	4.86	4.87	4.52	4.89	4.88	4.62
7. The instructor was available to students for discussions or conferences.	4.52	4.55	4.47	4.57	4.87	4.48	4.68	4.78	4.33
8. The instructor generally met class on time and held class to the end of period.	4.61	4.85	4.68	4.67	4.60	4.62	4.79	4.89	4.76
9. The instructor spoke clearly and could be heard in class	4.65	4.70	4.58	4.52	4.87	4.48	4.84	4.88	4.71
10. The grading system for the course was clearly explained.	4.61	4.80	4.58	4.71	4.87	4.29	4.79	4.75	4.76
11. Overall the instructor's teaching was effective.	**4.57**	**4.60**	**4.58**	**4.57**	**4.80**	**4.29**	**4.89**	**4.78**	**4.62**
12. CST Dept. Overall Instructor's effectiveness	**4.35**	**4.35**	**4.35**	**4.28**	**4.28**	**4.35**	**4.33**	**4.33**	**4.30**

Criteria	Fall 2017 CST 1100 (n=21, RR = 95%)	Fall 2017 CST 4714 (n=19, RR =79%)	Spring 2018 CST 4704 (n=21, RR=95%)	Spring 2018 CST 4714 (n=23, RR=96%)	Spring 2018 PHYS 3600ID (n=13, RR=81%)
1. The instructor communicated in a way I understood.	4.76	4.72	4.65	4.83	4.62
2. The instructor held my interest and attention in class.	4.86	4.67	4.43	4.74	4.54
3. The instructor took the time to explain the material when students did not understand it.	4.76	4.72	4.67	4.78	4.46
4. Students were encouraged to ask questions and were given meaningful answers.	4.86	4.72	4.57	4.87	4.75
5. Students encouraged to express own ideas and/or participate in class activities.	4.71	4.56	4.62	4.83	4.77
6. The instructor treated the students with courtesy and respect.	4.90	4.72	4.38	4.91	4.69
7. The instructor was available to students for discussions or conferences.	4.86	4.58	4.33	4.83	4.46
8. The instructor generally met class on time and held class to the end of period.	4.90	4.84	4.67	4.83	4.46
9. The instructor spoke clearly and could be heard in class	4.81	4.74	4.57	4.87	4.62
10. The grading system for the course was clearly explained.	4.86	4.68	4.62	4.70	4.69
11. Overall the instructor's teaching was effective.	**4.95**	**4.63**	**4.43**	**4.74**	**4.69**
12. CST Dept. Overall Instructor's effectiveness	**4.28**	**4.28**	**4.32**	**4.32**	**4.39**

Comments from students:

"great professor, very professional, caring, and respectful. he really wants you to learn and willing to explain thing over and over if you don't get it. i would take him in every chance i have. does really good reviews before the tests also. I owe him a lot, he is inspirational." (CST4704, Fall 2016)

"He's really nice and thoroughly enjoys helping students when they don't understand something." (CST1100, Fall 2014)

"I took his CST 1204 this summer 2016 and am I glad I did. Very passionate about teaching and made sure everyone understood the Database logic. Very clear in grading and promptly accessible after class. Deep knowledge of the field and the academics behind. Recommend any class he teaches and will take him for any of future class." (CST1200, Summer 2016)

3. Statements from Alumni on the quality of instruction:

1. Md Arefin, (First job after graduating: Technology Analyst at JPMorgan Chase)
   Course taken with me: CST 4714 (Spring 2016)
   "Prof. Satyanarayana, thanks so much for your course CST4714, it really helped me understand how projects are designed, prototyped and implemented in the real world. Your course helped me clear my interview at JP Morgan Chase, and the interviewer asked me a lot of questions about the Online Airline Reservation System that I implemented in your course."

2. Fatima Chebchoub (Pursuing Masters in Data Science at Western Kentucky University)
   Course taken with me: CST4714 (Spring 2015)
   "I wish to thank you for your course. Your course taught me how to understand difficult concepts through simple examples. Your assignments were thorough and useful in understanding the material practically."

4. Student publication/presentations:

The following are publications that were authored by my students and me and presented at conferences after taking my courses. A summary table is shown below:

Course	Semester	Student Name	Conference
CST4704	Fall 2015	Mariusz Nuckowski	American Society for Engineering Education (ASEE) MidAtlantic Section (Spring 2016), Washington D.C.
CST4714	Spring 2016	Rosemary Chinchilla	International Conference on Information Technology: New Generations (ITNG 2016), April 11-13, Las Vegas, Nevada
CST4714	Fall 2017	Janway Chen	Special Interest Group on Computer Science Education (ACM SIGCSE Conference 2018)
CST4704	Spring 2018	David Friedman Nadia Rodriguez	Mathematical Association of America (MAA) Conference 2018, May 13th 2018, Hofstra University, Hempstead, NY

F. Course Syllabi and Sample Assignments:

1. **Course Syllabi for the courses taught by me:** For each course listed below, I write out a week by week outline that is a guide to what is to be covered during each class session. My week by week outline lists all the major assignments and handouts that will be a part of the course followed by an outline for each day. The course outlines for the CST4704 and CST4714 were modified by me.

   Documentation: **CD**: Teaching/Appendix D1/CST1100 Introduction to Computer Systems.pdf (Online)
   Teaching/Appendix D1/CST1204 Database Systems Fundamentals.pdf (Online)
   Teaching/Appendix D1/CST4704 Data Mining and Data Warehousing.pdf (Online)
   Teaching/Appendix D1/CST4714 Database Administration.pdf (Online)

2. **Sample Assignments:** Most of my courses are designed such that there are at least 60% "hands on" assignments, where students need to practically implement some of the theoretical concepts explained in class. Here are a couple of assignments that are used in my CST4714 class:

   Documentation: **CD**: Teaching/Appendix D2/CST4704-Data Mining Classification Assignment.pdf (Online)
   Teaching/Appendix D2/CST4714-Lab04-Security-4.pdf (Online)
   Teaching/Appendix D2/CST4714-Lab05-Backup-and-Recovery.pdf (Online)

3. **Sample Handouts:** In addition to the textbook, I provide students with handouts, which cover all the concepts taught in class (with real world examples) for students to review. Below are three sample handouts that are given in my CST 4704 and CST4714 classes.

   Documentation:
   CD: Teaching/Appendix D3/CST4704-Handout1-Two Worlds.pdf (Online)
   Teaching/Appendix D3/CST4704-Handout2-Methodology of Datawarehouse design.pdf(Online)
   Teaching/Appendix D3/CST4714-Handout3-Reviewing SQL Concepts.pdf (Online)

4. **Sample Student work (for Term Projects):** All of my courses have a final term project for which students are given milestones throughout the semester. Below are two term projects with student submissions.

   Documentation: 1. **CD**: Teaching/Appendix D4/CST1100 Video Prototype.wmv (**Youtube**: Online)
   2. Airline Reservation Prototype (**Youtube:** CST4714 Airline Reservation Prototype)

5. **Powerpoint Slides**

   Documentation: **CD**: Teaching/Appendix D5/CST4704: DataMining-Classification.pdf (Online)
   Teaching/Appendix D5/CST4704: DataMining-Clustering.pdf (Online)

G. Teaching improvement activities:

Workshops and Conferences attended which improved my teaching:

1. Summer Institute for Teaching and Learning – June 2013
   Facilitator: Prof. Estela Rojas
   What I learnt: teach students to think and not memorize; teach the entire class when answering questions (always repeat the question, clarify, and answer)
2. ASEE MidAtlantic and National Conferences:
   Background: Twice a year since Fall 2013, I have had the opportunity to attend the ASEE Regional conferences, where I participated in several discussions on pedagogical strategies that other colleges and universities have successfully implemented.
   What I learnt: turn a question into an assignment; foster teamwork, collaboration, and group learning.
3. Teaching Portfolio Workshop – Summer 2017
   Facilitator: Prof. Janet Liou-Mark
   What I learnt: teaching students how to learn through self-discovery and internalized cognitive processes.

Educational Conferences and Journal Publications: I have found that publishing at educational conferences such as ASEE not only helps me articulate and hone some of my pedagogical strategies, but also helps in sharing what I found beneficial with other instructors and researchers.

Appendix Contents:

Appendix B1: Peer Faculty Evaluations
CD: Teaching/AppendixB1
Online: Click on the links below:

- Fall2012-Peer-Evaluation-HongLi.pdf
- Fall2013-Peer-Evaluation-XiangdongLi.pdf
- Spr2014-Peer-Evaluation-DavidBellehsen.pdf
- Fall2014-Peer-Evaluation-CandidoCabo.pdf
- Spr2016-Peer-Evaluation-HongLi.pdf
- Fall2016-Peer-Evaluation-DavidBellehsen.pdf
- Spr2017-Peer-Evaluation-BaderOudjehane.pdf
- Fall2017-Peer-Evaluation-HongLi.pdf
- Spr2018-Peer-Evaluation-CandidoCabo.pdf

Appendix B2: Student Evaluations of Teaching
CD: Teaching/AppendixB2
Online: Click on the links below:

- StudentEvaluation-Fall2012-CST1100-7610
- StudentEvaluation-Fall2012-CST1100-7606
- StudentEvaluation-Spr2013-CST1100
- StudentEvaluation-Spr2013-CST1204
- StudentEvaluation-Fall2013-CST1100
- StudentEvaluation-Fall2013-CST1204
- StudentEvaluation-Spr2014-CST1204
- StudentEvaluation-Spr2014-CST1100
- StudentEvaluation-Fall2014-CST1100
- StudentEvaluation-Fall2014-CST4704
- StudentEvaluation-Spr2015-CST4714
- StudentEvaluation-Fall2015-CST4704
- StudentEvaluation-Fall2015-CST1100
- StudentEvaluation-Spr2016-CST4714
- StudentEvaluation-Fall2016-CST4704
- StudentEvaluation-Fall2016-CST1100
- StudentEvaluation-Spr2017-CST4714
- StudentEvaluation-Fall2017-CST1100
- StudentEvaluation-Fall2017-CST4714
- StudentEvaluation-Spr2018-CST4704
- StudentEvaluation-Spr2018-CST4714
- StudentEvaluation-Spr2018-PHYS3600ID

Appendix D1: Course Syllabi
CD: Teaching/AppendixD1
Online: Click on the links below:

- CST1100 Introduction to Computer Systems
- CST1204 Database Systems Fundamentals
- CST4704 Data Mining and Data Warehousing

CST4714 Database Administration
CSC 80020 Computer Science Research (Graduate Center)
PHYS3600 Machine Learning for Physics and Astronomy (Interdisciplinary Course)

Appendix D2: Course Assignments
CD: Teaching/AppendixD2
Online: Click on the links below:

CST4704-Data Mining Classification Assignment
CST4714-Lab04-Security-4
CST4714-Lab05-Backup-and-Recovery

Appendix D3: Course Handouts
CD: Teaching/AppendixD3
Online: Click on the links below:

CST4704-Handout1-Two Worlds
CST4704-Handout2-Methodology of Datawarehourse design
CST4714-Handout3-Reviewing SQL Concepts

Appendix D4: Student Term Project Submissions
CD: Teaching/AppendixD4
Online: Click on the links below:

CST1100 Video Prototype
CST4714 Airline Reservation Prototype

Appendix D5: Course Powerpoint Slides
CD: Teaching/AppendixD5
Online: Click on the links below:

CST4704: DataMining-Classification
CST4704: DataMining-Clustering