**Statement of Research Interests**

My primary research interests are in the areas of new programming languages, data mining, database systems, cloud computing, and mobile application development. Computer science pervades nearly every aspect of our lives in the 21st century. My interests are primarily two-fold: the use of computer applications to assist faculty and staff of institutions of higher education with the ultimate goal of providing students a better education and the use of computers to make us a more productive society. With technology comes potential, and I am passionate about exploring the development of technology to create systems that increase efficiency and thus enhance human-to-human interactions by eliminating time-consuming tasks and allowing the time for personal interface.

**Past Research**

My Master’s thesis was on Automated Network Diagram Automation using a Bayesian Network Classifier. I used tools such as Weka, NMap, Custom Perl Scripts, and Excel to automatically generate the diagram of live nodes in networks of different sizes only bound by NMap’s ability to retrieve node information from partial IP addresses. NMap would retrieve information given a range of IP addresses. Components of information that were retrieved were make and model of the machine, Operating System, and OS version.

**Current Research**

A mobile application development project for American Veterans is currently being researched and developed by second-year students in the course SDEV264, the most difficult course in the Software Development program. This application will provide a way for veterans to search for their benefits using an SQLite query of a database stored in the cloud on an AWS server. Upon retrieval of the information, the app will display markers of found locations using the Google Maps API.

**Quantitative Research on Degree Completion, Learning of 21st Century Skills and Course Content Materials compared in virtual, traditional Face-to-Face, and online course delivery methods**

Continuing the research, I conducted, with my dissertation research and writing for my Ed.D. degree at Oakland City University. My desire is to use my technical skill in software development in a way that benefits higher education, specifically with quantitative research on degree completion and measurement of the amount of learning through interdisciplinary pre- and post- technical outcome assessments using a data mining and data warehousing tool.

**Artificially Intelligent and Machine Learning System for Online Faculty**

Colleges and universities across the nation are dealing with the problems of student retention, student engagement, and low graduation rates. Faculty and staff are overwhelmed with administrative tasks that could and should be automated to help reduce the workload of these employees so that they can better focus their attentions on education. Tasks such as grading assignments, grade reporting, academic and career advising, course development, feedback to students, attendance records, no-show withdrawals, credit transfers and course substitutions, degree completion tracker, and student completions are depleting the time instructors have available for real teaching and working with students. All of these necessary reports that monitor student progress or lack thereof could be automated within a learning management system (LMS) such as Canvas, thus freeing the valuable time of instructors and professors and making them more available to focus on delivery of education.

The solution I would like to explore and develop I call iProfessor, an artificially intelligent and machine learning system that narrows the connection between the student and online faculty by providing more interactive service, encouragement, and reminders. This artificial intelligence would integrate with various computer systems within a given college. For example, at the end of a semester, grades are already in the Learning Management Systems (LMS) and then need to be transferred to/recorded in another computer system such as Banner. With this AI system, those grades would automatically be transferred from the LMS to Banner. Faculty and students, the end users, would benefit dramatically.

**Data Mining of The Common App to Extract Transcript Information**

Many problems exist with getting student high-school transcripts transferred to college institutions. Via The Common App, transcripts are transmitted in .pdf format, and colleges don’t know how to process it. Additionally, the Common App data is diverse in how it is formatted, how it looks, and what is required and received. Data varies greatly between students, and even within a single student, it can be quite diverse. An .xml format would standardize all of this information. I believe the solution is to use Acrobat Pro to convert The Common App data into plain text and then create a software solution for converting that text into the .xml file format that any college computer system could then process and create admission transactions that could be processed by existing systems. Extensive research and analysis of existing data would need to be performed as well as existing systems would need to be analyzed to determine a standardized format of the data that college admission systems need.