DEPARTMENT OF
COMPUTER SCIENCE
College of Arts and Sciences

Computing Cowboys Newsletter December 2019

From the Department Head

Dear Alumni and Friends:

Following the tradition of previous years, it is my privilege to present to you another edition of the Computing Cowboys Newsletter. The December 2019 edition is unique as it coincides with the 50th anniversary of the Department and its celebration. I am inviting all alumni and friends to explore the contents and connect with the department.

In Fall 2019 we have some new additions. We welcomed several new tenure-track and teaching track faculty members. We are offering a new on-line BS degree in Computer Science. Also, due to the generosity of our alumni, we added three endowed undergraduate scholarships!

Our faculty continue to conduct excellent research, publish research papers in international conferences/journals and to diligently submit research proposals. As in 2018, we conducted two NSF supported REU sites. Other research projects undertaken by our faculty can be found in the following pages.

As in the past, the ACM student group is very active. Dr. Esra Akbas attended the 2019 Grace Hopper Celebration of Women in Computing.

I am happy to report that our department is growing and we are looking forward to connecting with you in 2020.

Best Regards,

K.M. George
Professor & Head
Department of Computer Science

College of Arts and Sciences Award Banquet , April 10, 2019 —Outstanding CS Student Ahmad Tashfeen and Outstanding Math Student (with CS second degree) Samuel Wood

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Students and Research

Ethan Mayberry – "Get Involved"
Junior, Hometown: Edmond, OK

OSU was a natural choice for Ethan who is an OSU fan from Edmond. He visited OSU with an interest in Chemistry, enrolled as a Computer Engineer major, and then changed his major to Computer Science when he was enrolled in Dr. Cline's Computer Science I course. Ethan also credits Dr. Crick's "really cool" Computer Science II course for his path into Computer Science. "It was difficult but fun. I learned a lot." Ethan likes the problem solving and creativity in programming. "There are lots of ways to solve problems."

Ethan's recommendation to new students is to get involved early. "Try different things and see what works or doesn't work. The earlier you start, the better." Ethan was inspired by Ben Myers as a member of the Association of Computing Machinery since Ben brought in ideas outside of course content. Ethan is serving as this year's ACM President and has served as the secretary and public relations officer in past years.

Ethan's involvement at OSU also includes joining the Beta Upsilon Chi fraternity. Ethan likes the community of OSU, "It feels like family." His fraternity is his "brotherhood" and his involvement has helped him meet people.

Ethan plans on a December 2020 graduation. He interned at Hobby Lobby in Summer 2019 and plans on another internship in Summer 2020.

Briana Bumgardner – "Dream Big"
Sophomore, Hometown: Boley, OK

Briana transferred to Oklahoma State University from University of the People, a free online university. She wanted to interact with people to broaden her horizons. One of Briana's favorite aspects of OSU is its diversity. She enjoys meeting people from different countries and cultures.

Briana is the first child in a family of eleven children from Boley, OK (pop. 1,200). She was homeschooled and enjoyed the academic freedom to study topics in which she was interested and was able to focus and work at her own pace. Some of her studies include learning from Khan Academy and EDX (Briana took an online Biology course from MIT). Her father is a computer technician and, at one time, the family had two 3-D printers in the home.

Briana hopes that her Computer Science degree will give her the freedom to work in various types of industries and to travel. She enjoys the problem solving required in programming. "Computer Science is so big and in every industry. CS is the basis of all things in this technical age."

She has one sister studying at OSU and a brother may be joining them soon. Briana recommends OSU and the CS program to her siblings.

Brayden Dyke – "Improvise. Adapt. Overcome." - Bear Grylls
Junior, Hometown: Guthrie, OK

Brayden began the Computer Science program at OSU because of his interest in video game development and the story line aspect of video games. Brayden liked games as a child and participated in robotics in high school which was his introduction to programming. He recognizes the narrow field of game development and is open to various opportunities in the computer science industry. Brayden emphasized the important of data structures as a powerful problem-solving tool for any industry.

Brayden has found the professors at OSU to be very helpful and to be vested in student learning. "The professors are accessible and the communication is helpful. Dr. Crick wants people to be able to do cool stuff. His projects were really interesting. Dr. Cline was really helpful in getting students involved, especially with ACM. Dr. Mayfield helped get game development going with his ideas. The Video Game Developers Club is fantastic." Brayden is currently the President of the Video Game Developers Club where members look at various aspects of gaming such as audio, graphics, and game design.

Brayden interned at FAST Enterprises during Summer 2019, working on tax applications for state and city governments. He plans on interning there again in Summer 2020 and looks forward to a May 2021 graduation date.

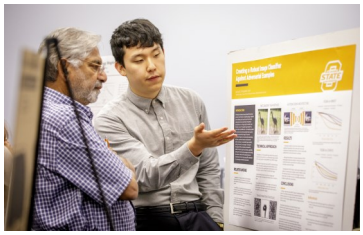
UNDERGRADUATE RESEARCH

REU Site: Big Data Analytics

Dr Crick and Dr Akbas accompanied undergraduate Sarah Townsend to a conference in Washington DC, where she presented her work. She conducted her research, "Tweets as an Indicator of Political Outcomes", over the summer under the guidance of Dr George as part of an NSF-funded program

REU Program director with student

Vice President of Research and student presenter



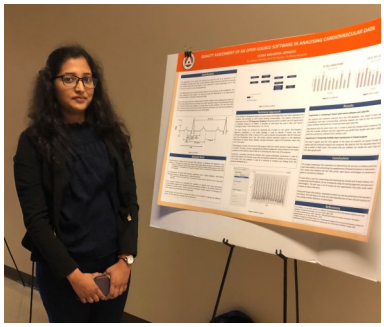
Student with Department Head

Department of Computer Science

Hosts

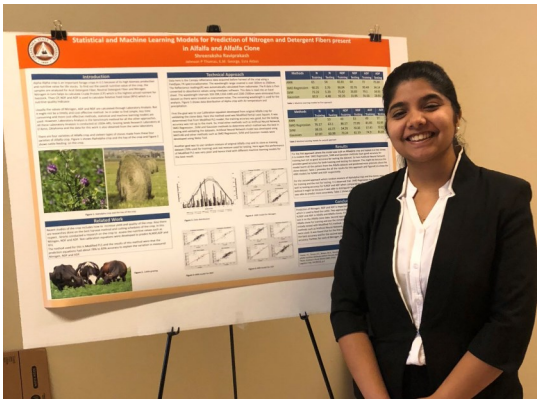
2019 REU POSTER PRESENTATIONS

MASTER'S STUDENT POSTER PRESENTATION DECEMBER 2019



Master's student Huma Lepakshi's presenting: Quality Assessment of an Open-Source Software in Analysing Cardiovascular Data

Master's student Anshu Garg presenting: Meta-Learner Using Stacked Generalization for Ensemble Learning



Master's student Shreerakasha Raviprakash presenting: Statistical and Machine Learning Models for Prediction of Nitrogen and Detergent Fibers

Sathyanarayanan Aakur is broadly interested in the intersection of computer vision, natural language processing and psychology. His aim is to build intelligent agents that understand the visual world beyond recognition (labels) or captions (sentences) without the need for explicit human supervision. This entails developing approaches such as self-supervised predictive learning for video event segmentation, common sense reasoning for ground perception and prior knowledge, and generative modeling for building knowledge .

New faces in our faculty

Arunkumar Bagavathi focuses on designing deep-learning frameworks to learn multiple activities in social media to enhance network-based machine learning tasks such as prediction, forecasting, and clustering. His work also leverages the use of cloud tools to frame a collection of scalable data agnostic models to glean actionable recommendations from massive data sources. For example, his multiplex model can identify user communities in the social media from their various activities and his action-mining model can impart personalized recommendations for hospitals to handle patients to improve care and reduce readmission rates.

Thanh Thieu is experienced in computational intelligence and computational linguistics. His work involves Natural Language Processing (NLP), data science, predictive modeling, machine and deep learning, semi-supervision, data augmentation, and domain adaptation. Before joining OSU, he worked on NLP of functional terminology and interpretable predictive modeling of allegation text at NIH Clinical Center. Currently, he is focusing on NLP and deep learning, with application in health care, education, and bioinformatics.

New Faculty celebrating at the 50th Anniversary Celebration.

Rittika Shamsuddin aims to improve communication between researchers in fields of computer science, biology, and medicine via knowledge-sharing and by developing algorithms and experiments which will increase the interpretability of various machine-learning and artificial intelligence models. Such libraries and developments are necessary for extending technological success of computational fields to solve problems in healthcare/biology with a higher degree of trustworthiness and reliability than exists at present. Her past work includes bioinformatics and clinical informatics.

Drs. Bagavathi, Shamsuddin, Aakur and Thieu

Welcome

New Teaching Assistant Professors

On the left is Dr. Shital Joshi. On the right Dr. Sadiq Al Buhamood. Welcome to OSU!

Distinguished Alumni Award Winner
Bob Martin

Bob receiving his award from Dean Krutz at the CAS Hall of Fame Award Banquet April 10, 2019

Robert (Bob) Martin is a native Oklahoman, born and raised in Muskogee. Bob graduated from Oklahoma State University in 1992 with a Bachelor's degree in Computer Science. Bob started his IT career full time in January 1993 while continuing his education part-time, culminating in a Master of Business Administration degree from Oklahoma State University in 1997.

Bob's early IT career centered on data management, specifically database administration and data warehousing. Bob's drive for results and leadership skills soon led to data administration and architecture managerial opportunities at Koch Industries (Wichita, KS) and Williams Communications (Tulsa, OK). While very successful in those roles, it was as IT Director at NORDAM (Tulsa, OK) that Bob assumed broader responsibilities to include application development across a wide spectrum of platforms and technologies. After leading NORDAM through a technology and systems transformation, a Tulsa Insurance company (Mid-Continent Casualty) recruited Bob to lead their own legacy system transformation efforts as Vice President and Chief Information Officer.

2018 –2019

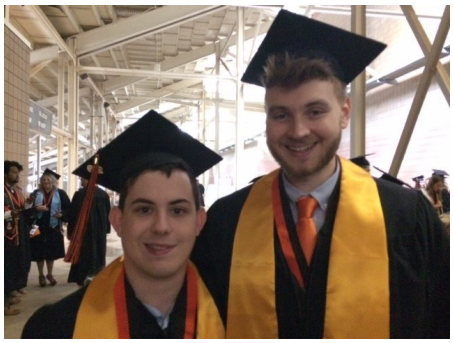
Computer Science Graduates

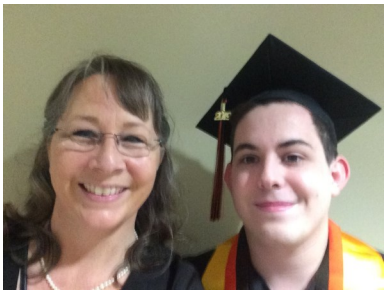
DEGREES CONFERRED

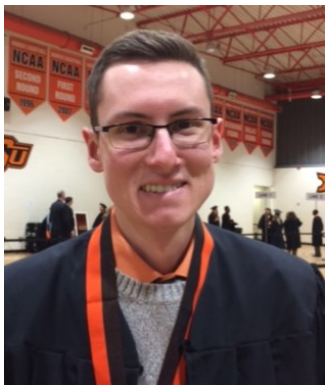
BS = 51
MS = 29
PhD = 2

Ahmad Tashfeen and parents celebrate his Outstanding CS Student Award with Dr. Crick

Outstanding **Students**



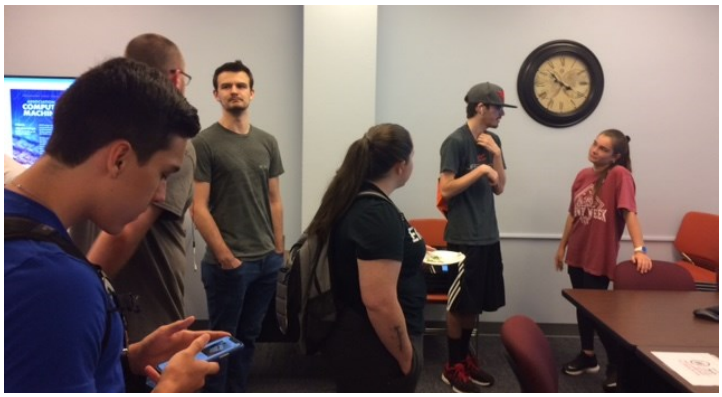




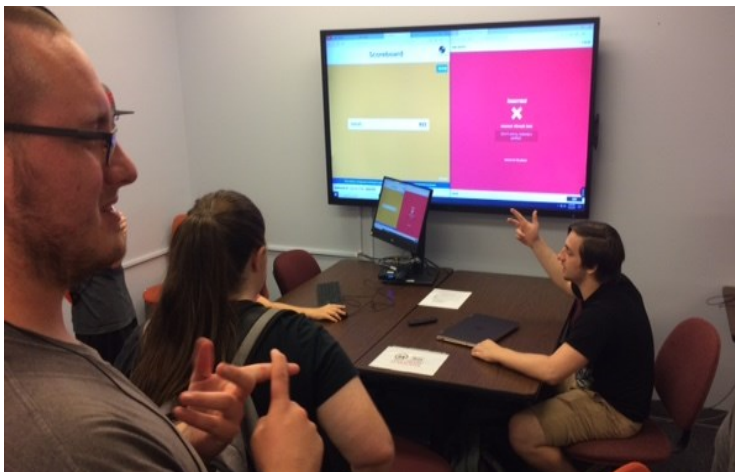
New Graduate Student Orientation

Fall 2019
Graduate Student
Orientation in
new Collaborative
Learning Laboratory

Computer Science Open House—
September 5, 2019



Upperclassmen answering questions at the open house



Playing games to break in the new lab.

Dr. Mayfield
explaining to
students aug-
mented and vir-
tual reality in his
lab (MSCS 203E)

Department to Offer Online BS Degree

Beginning with the spring 2020 semester, the Department will offer an online BS degree in Computer Science. According to Dr. Blayne Mayfield, who is directing the effort, "This will permit us to reach more students than ever, in line with the land-grant mission of OSU." Over the next few semesters, online counterparts of face-to-face courses will be developed and offered until the courses needed for a full BS degree will be available online. "Our online program also will provide the opportunity for those undergraduate students who have a summer internship to take our courses while working anywhere in the world," said Mayfield.

The online courses being offered during the spring 2020 semester will be CS 1 (CS1113), Computer Systems (CS3443), Discrete Math (CS3653), and Mobile App Development (CS4153). Other lower- and upper-division undergraduate courses will be added in subsequent semesters.

Research News

Robotic Cognition Laboratory

Prof. Christopher Crick

Congratulations to SM al Mahi, whose paper "Distributed heterogenous robot-human teams" was published at the Autonomous Agents and Multi-Agent Systems conference (AAMAS) and presented in Montreal, QC. His work involves developing algorithms for coordinating groups of robotic vehicles with different capabilities, and integrating their autonomous behavior into systems that are directed and advised by humans. Applications of his work have been applied to studying the formation of severe storms and other weather phenomena, as described in the paper "Intercomparison of small unmanned aircraft system (sUAS) measurements for atmospheric science during the LAPSE-RATE campaign", recently published by our lab and others in the journal Sensors.

Congratulations also to Habib Boloorchi, who won an award at OSU's College of Arts and Sciences Three Minute Thesis competition held on October 30 for his work on visual inertial odometry.

SM Al Mahi

Research
News
Cont.

New Beginnings

There are two more new research labs starting this year. They are:

Visual Understanding and Complex Systems Lab

Drs. Sathya Aakur

& Arun Bagavathi

Intelligent Learning for Explainable Acute Decision -making Lab: iLEAD

Dr. Rittika Shamsuddin

Language and Intelligence Laboratory

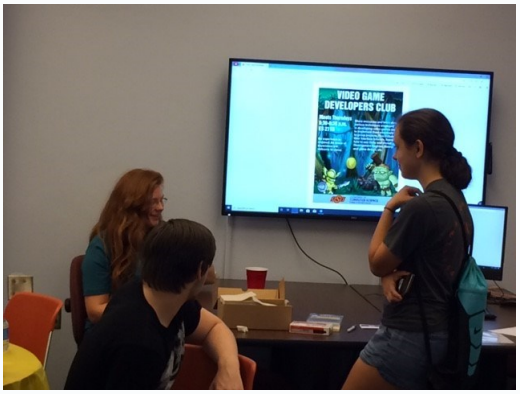
Dr. Thanh Thieu

The Language and Intelligence Lab officially opened in November 2019 at 116-A Math Sciences. LI lab focuses on using Natural Language Processing and Deep Learning to advance the fore front of healthcare, biomedicine, bioinformatics, and education. Current projects include: (i) processing whole-person functioning information in electronic health records, (ii) knowledge discovery of host-pathogen interaction from biomedical literature, and (iii) enhance lexical diversity in semantic embedding. LI lab's ultimate goal is linking human's cognition to language, representational, and compositional learning.

Welcome Elham Madjidi, first year Ph.D. student.

Language and Intelligence Lab currently has vacant positions for Ph.D. students in Natural Language Processing and Deep Learning.

Interested parties are welcome to send CV to: tthieu@okstate.edu



Kayla Walkup talking to freshmen in new CLL Lab.

The CS Department was awarded funds to equip the Collaborative Learning Laboratory with three wePresent systems and three large monitors. This laboratory provides space for undergraduate and graduate students to work on projects. Presentations, meetings, studying, and lunches are also a common activity in this space.

Data Engineering Lab

Esra Akbas

We work on the development of algorithms for data mining and analysis with particular emphasis on large-scale text and graph-structured data. We mainly focus on social network and health data as the application area. This year we have four new members in our lab.

REU Student Achievements:

William Tanner - Presented an accepted paper at REU 2019 Symposium at IEEE Big Data Conference, December 12, 2019.

- Title : Paper Recommendation Based on Citation Relation

Ginger Johnson - accomplished two poster presentations,

- OK-WISE Conference
- 108th Annual Technical Meeting of the Oklahoma Academy of Science

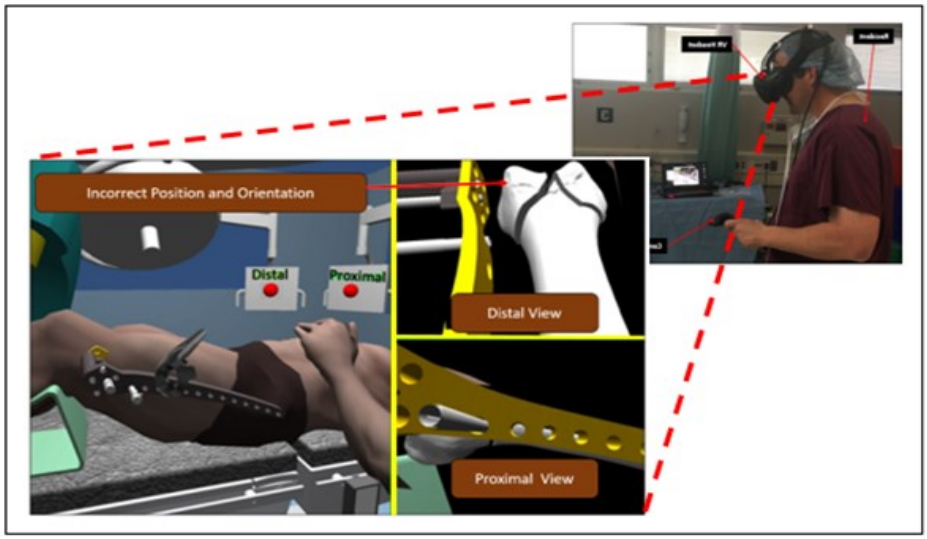
Virtual Reality and Information Centric Engineering Lab

Joe Cecil

Current Research Projects

Exploring the Design of a Virtual Reality Based Simulation Environment for Orthopedic Surgery Training

Dr. Cecil (Center for Cyber-Physical Systems) is leading an initiative to design a VR based simulation environment for training medical residents in orthopedic surgery. One of the thrusts is the adoption of Human-Computer Interaction (HCI) principles for the design, development, and evaluation of a complex cyber-human framework for surgical training. The specific surgical domain of interest is LISS plating surgery, which is a procedure to treat fractures of the femur bone. Assessment of learning and acquisition of surgical skills is ongoing in interaction with medical residents and surgeons at partner medical universities in New Mexico and Arizona. The simulation based training environments are being created using both immersive and haptic based platforms. Prior work in this area (completed earlier) demonstrated the feasibility of adopting Software Defined Networking (SDN) approaches to support simulation based training interactions involving distributed users.



A Medical Resident interacting with the Orthopedic Training Simulator

Exploring the design and impact of Virtual Learning Environments for children with Autism

This educational research project (involving Dr. Cecil) focuses on exploring the role of Virtual Learning Environments (VLEs) in supporting science and engineering learning for children with autism. Autism and Autism Spectrum Disorders (ASD) are general terms for a group of complex disorders of brain development. Autistic children and teens exhibit certain characteristics in varying degrees including difficulties in verbal/non-verbal communication, social Interaction, and repetitive behaviors. The VLEs are being created using emerging Virtual Reality technologies in collaboration with Dr. Mary Sweet-Darter (an educational psychologist). As a part of learning activities, three types of VLEs are being developed: non-immersive, immersive, and haptic based environments to teach autistic students STEM concepts. The initial assessment results underscore the usefulness of such VLEs to support STEM learning for children with autism. Additional research is continuing involving elementary, middle, and high school students. The VLE modules that are being built include topics such as density, robotics, assembly and manufacturing, among others.

A view of the Virtual Learning Environment developed for students with autism

Design of an IoT based Cyber-Physical framework for Advanced Manufacturing

In this NSF Cyber Manufacturing project, Dr. Cecil and his students have designed and built one of the first Internet-of-Things based cyber physical test beds. The process domain involves the assembly of micron sized devices using distributed cyber and physical resources linked through Software Defined Networking (SDN) and cloud technologies. Several key milestones have been achieved in this project including demonstrating the feasibility of such emerging SDN principles to support 3D Virtual Reality based simulation interactions among distributed engineers. One of the key thrusts is exploring the design of such cyber physical frameworks using information modeling approaches. Another characteristic of the proposed approach is the emphasis on virtual/ augmented reality environments and their role as a critical link between cyber and physical components.

Simulation-Based Design (SBD) Approaches in Creation of AR-based Training Environments for the Moon Mission

Simulation-Based Design (SBD) approaches can play a key role in the training of astronauts for the Moon Mission, especially involving service activities on the Gateway. This NASA X-Hab project involves the adoption of Augmented Reality based digital mockup techniques and technologies to support two thrusts related to astronaut training in the context of the Gateway: (1) training to perform service operations involving computers and processors (2) training to move payloads to storage locations within the Gateway.

Two AR based platforms are being used in the design of these training simulators: HTC Vive(tm) and Micosoft HoloLens(tm). Several faculty in the Center for Cyber-Physical Systems are leading this initiative (including Drs. J. Cecil, Shelia Kennison, Chris Crick, Krishnamurthy, S. Aakur, Johnson Thomas). Student teams have completed the first phase of this project which includes identifying requirements and completing the preliminary design of these AR based training environments. The simulation environments are being created using Unity 3D engine and C# programming tools. Three teams are working on the design, implementation, and testing of the various modules that support the training activities. Human-Computer Interaction (HCI) and systems engineering principles are being adopted in the design of the cyber-human simulation environments. These activities are part of NASA's X-Hab Challenge initiative involving the Artemis Moon Mission (which seeks to land the first woman on the Moon in 2024). Project teams are interacting with NASA Ames and NASA Stennis Centers as part of this project. A view of the cyber physical validation environment which is being created to validate the AR based training environments is shown in the figure below.

A view of the Cyber-Physical Environment which is being built to validate the AR training environment for the NASA X-Hab project

50th Anniversary of the Department

Thanks to Joe Carrol and Deric Driver for co-chairing this event and all who participated in the OSU Computer Science 50th Anniversary celebration! The events were great with many alumni and students attending. About $210,000 was raised toward the goal of $256,000 for student scholarships.

There will be photos and write-ups posted on the departmental website very soon. In the meantime, you can go to

https://www.flickr.com/photos/123510357@N08/albums/72157711190564343

Derric Driver and Joe Carroll

NEW ENDOWED SCHOLARSHIPS

Charles B. Brown Endowed Scholarship in Computer Science
Derric Driver Computer Science Diversity Scholarship
Joseph B. Carroll Endowed Scholarship in Computer Science

Joe Carroll, Joanna Hwang, Kayla Walkup, Ashwin Kannan and Dr. Mayfield

Former long-time CS Academic Advisor Judy Edgmand visits with her son, Craig Edgmand (BS CS 1987) and current CS Academic Advisor Cara Brun. Craig and Cara were high school classmates.

Alumni Roger Boydstun getting a quick picture.

REFLECTIONS OF AN ALUM

Charles B. Brown

In 1949, I graduated from Martha High School in Martha, Oklahoma. I went one semester to Altus Junior college in Altus, Oklahoma. Facing the draft, I joined the 245th Tank Battalion of the 45th Division of the Oklahoma National Guard, which I knew was going to be activated on September 1, 1950 for service in the Korean War. I served 21 months in the Army, receiving an honorable discharge in June 1952. This service entitled me to certain benefits under the GI Bill that would now allow me to financially afford to continue my college education.

Although a native of Oklahoma, I applied for admission and was accepted by Texas Tech University in Lubbock, Texas. Many of my friends were going to Oklahoma A&M and they urged me to come with them to Stillwater. Among them was a high school friend, Frank Wooldridge, who had just returned from serving his time in the Air Force and was looking for a roommate. Thinking of watching Hank Iba's Oklahoma Aggie basket ball team play and knowing my heart was in Oklahoma, I made the decision that Oklahoma A&M was the school for me. So Frank and I found an apartment in Stillwater at the House of 8 Gables, near the campus. Being new to the campus and the protocol of how to get started in this University, I depended on Frank, who had attended one year at A&M before entering the Air force, to help me get oriented. I visited with an advisor, who questioned what I wanted my major to be. Having no firm plan, I finally concluded that I wanted to major in Math. So I entered the School of Arts and Sciences and enrolled in College Algebra, as part of 17 hours of required classes in my first semester of my freshman year.

My first year at A&M was a challenge due to poor college preparatory work. I had to learn how to study and allocate my time properly. In order to achieve my goal to graduate in 3 years, I went to Summer School after my freshman year, and afterward took 18 or 19 hours each semester continuing my objective of graduating with a Math Degree. As I considered the career options available for math graduates, I decided to switch from the School of Arts and Science to the School of Education and take the necessary courses to obtain a teaching certificate to teach high school math. Along the way, I took a course in Differential and Integral Calculus (Math 215 and 223) which was taught by Dr L. Wayne Johnson, who was the head of the Math Department. (It was very unusual for a full professor and the head of a department to teach a lower level class. He told me some time later that he just wanted to stay in touch with under graduate students.) I was not his best student, but he took a liking to me, maybe because I was a veteran, a little bit older and more mature than his typical student. (I later took Advanced Calculus, Math 453 and 463 from Dr Johnson.)

On the first day of school, in the fall of 1954, starting my senior year, I was on the 5th floor of the classroom building (where incidentally the faculty offices for the Math Department were located) on my way to meet a class when I happen to meet up with Dr Johnson. We greeted each other and he invited me to meet with him in his office when my class was over. We did meet and he explained that a graduate student whom he was counting on to teach two freshman algebra classes (8 hrs) had at the last minute declined his offer to teach. He offered me, on the spot, a student teaching job to teach these classes. Pay would be $90 a month. I was overjoyed and immediately accepted his offer. I was very excited about this opportunity because of the money which would supplement my G I Bill income of $135 a month.

In the Spring of 1955, I had accumulated enough hours to graduate with my BS Degree in Mathematics at Oklahoma A&M. I then decided that I would enroll in graduate school to pursue a Masters Degree in Math.

In the summer of 1955, I enrolled in summer school to take six hours of graduate courses in math. With about a week's time off from school between the Spring and Summer sessions, I decided to visit my parents for a week and help my dad on the farm. While there, my dad had a severe accident while bailing alfalfa hay for a neighbor which

resulted in the fingers on his left hand being severed. The doctor said it would be days without any activity for my father and weeks before he could work again. Because there was no one else to do the work, I quickly made the decision that I must stay the summer with him to do the farm work. I took an "Incomplete" in my two summer math classes that I had enrolled in and decided to make them up in the fall semester.

So for the fall semester of 1955, I not only made up the incomplete 6 hours of summer classes, but took 12 hours of other graduate level math classes – and -- I continued to teach 8 hours in the Math Department. This semester was most challenging and almost overwhelming.

In the spring of 1956, Dr Johnson (and others in administration at A&M) made the decision to lease an IBM 650 computer to be installed on the campus the following September with the Math Department having 50% of the computer time. Dr Johnson had asked Dr Jim Hamlin, a Mathematical Statistics professor, to head the project for the Math Dept. I am not sure what arrangements were made to share the cost of the computer, (which in round numbers was about $4,000 a month for a single shift, I e. 176 hours monthly of computer time. Extended time was billed at about 40% of prime time. The university may have been given an educational discount of 20%. These costs also included maintenance of the equipment by an IBM field engineer.)

I believe that this was one of the single most important decisions ever made at the university.

At some time during the spring of 1956, I was summoned to a meeting with Dr Johnson who asked me if I would like to consider an internship for the summer of 1956 to work for Dr Jim Hedrick, a pioneer in the use of digital computers in the petroleum industry, in the Research Department at Continental Oil Company in Ponca City, Oklahoma. The purpose of this internship was to learn about computing and specifically to learn how to program the IBM 650 Computer. In my naivety, knowing nothing about what computers were all about, I accepted his offer – commuting to Ponca City (about 40 miles away) from Stillwater every day during June, July and August. (Fortunately, I discovered another student, who was in a different intern program for the summer at Conoco and a professor from the School of Commerce who also was working at Conoco for the summer. We car pooled together daily to Ponca City.) During the summer of 1956, a space was cleared and extra power and air conditioning was installed in the basement of the Home Economics Building where the IBM 650 was to be installed.

In the fall, Dr Hamlin and I along with two other graduate students (who had interned at Tinker Field in Oklahoma City during the summer) established the first informal computer training seminars at Oklahoma State University. We consulted with prospective users and taught coding to beginners. The classes stirred much interest across the campus with students and faculty as well as people from the Controllers Department who were quick to become interested to see what could be done with this computer in administrative applications. There was no such thing called "software" for the IBM 650 at the time. Computer programming was done in machine language with op codes, data location, etc. being in digital form and entered into the computer on punched cards. Output was by card only and had to be printed off line on an accounting machine. Later on, a compiler called "SOAP" was available from IBM so that commands, data location etc. could be given mnemonic names by the programmer. This computer programming was at its most primitive state.

Programming languages such as Fortran for the IBM 704 and Cobol for the IBM 705, large scale computers, were not yet available for the IBM 650. (Fortransit, a subset of Fortran was later developed for the IBM 650 computer.) There were no software companies and few if any "canned programs" available from other users, so if you needed something done on the computer – you had to write the program. In a sense this was an opportunity to be a pioneer in a new and glamorous industry that has changed the whole world! Needless to say, this was an opportunity of a lifetime. It changed my whole life from not knowing what my occupation was to be -- to getting in on the very ground floor of a new industry. I will be forever grateful to Dr Johnson for this opportunity. In honor of him, I have designated in my will, 10% of the assets from my estate for scholarships for needy students in the OSU Computer Science Department, to be administered by the Oklahoma State University Foundation.

There should be a tribute to the University and Dr L Wayne Johnson for his leadership, vision ,and foresight to help establish the University's first computer installation.

My summer project at Conoco was to write a computer program for "Three Stage Flash Vaporization Calculations", a refinery process. This work was done in conjunction with a Petroleum Engineering Graduate student, also a summer intern, who was seeking his PhD degree from Oklahoma University. Because of the uniqueness of the computer application, I was able to submit documentation of this summer's work to my graduate committee for a 2 hour credit for my Master's thesis. That summer at Conoco was a milestone in my life, I had no idea where the computer industry was going, I just knew that I wanted to be a part of it!

Upon graduation, I received many offers to become a computer programmer from a number of good companies in the petroleum and aerospace industry, as well as offers from agencies of the federal government. I had always been interested in the petroleum industry, having worked in a refinery for a summer, doodle bugged for a summer, and because of my summer intern experience at Conoco. So, because this company was in Oklahoma and the fact that their computer was an IBM 650, I accepted an offer to be a computer programmer for the production department of a major oil company in Oklahoma City.

After about a year with this company, I joined IBM as an applied science representative which began a career of selling and installing computer systems to major companies and federal government agencies in Dallas, El Paso, Los Angles, and later included responsibilities as Branch Manager for IBM in Albuquerque, New Mexico; Phoenix, Arizona, and Houston, Texas . This career included bringing IBM resources to customers to help them use their computer systems to maximize efficiency, productivity, and profitability for their corporations. After 25 rewarding years with IBM, I spent 5 years as partner in charge of management consulting for a Big 8 accounting firm, V P of Information Systems for a chemical company, and five years as a director of consulting for a major international consulting firm.

After over 35 years in the Information Systems Industry, I am now retired and living in Houston Texas.

Charles Brown with Dr. K.M. George, CS Dept Head at the 50th Anniversary Celebration

Recently Published Papers

Refereed Journal and Conference Papers

Arun Bagavathi. Scalable Action Mining for Recommendations to Reduce Hospital Readmission" is published in 20th IEEE International Conference on Information Reuse and Integration for Data Science 2019

Arun Bagavathi. Examining Untempered Social Media: Analyzing Cascades of Polarized Conversations is published in IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM) 2019

Arun Bagavathi. Extracting Cryptocurrency Price Movements from the Reddit Network Sentiment is published in 18th IEEE International Conference on Machine Learning and Applications (ICMLA) 2019

Arun Bagavathi. RragamAI: A network Based Recommender System to Arrange an Indian Classical Music Concert"is published in 18th IEEE International Conference on Machine Learning and Applications (ICMLA) 2019

Abhilash Kancharla and N. Park, "A Realtime Crypto Computing and Block-Dependability", IEEE SC2 2019

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