G. Raymond Brown, Ph.D.

12218 D Jones Rd
Number 118
Houston, TX 77070

Phone: (713) 718-8010
Email:g.brown@hccs.edu

Objective: My objective is a position that provides scope for the use of my experience and skills in education, information technology and project management. Specifically, these include network design and operation, robotics, artificial intelligence, machine learning, image processing, information technology, data fusion, Cloud based systems, physics and mathematics education. I also have experience in management and administration, fund raising for educational improvement, and development and implementation of robotics, science and mathematics courses designed to teach robust methods of problem-solving for academic and workplace environments. Recently the rapid, profound advancements in Robotics, IOT, Single-Board Computers, and Artificial Intelligence have led me to focus on work in these areas.

Experience: In the 2018 – 2019 academic year, I was certified in and have taught networking, cybersecurity and A+ (PC hardware) courses at Houston Community College. I am an Apple Teacher for HCC and will in addition be teaching courses in Python and ROS (Robot Operating System). I have Splunk certification fundamentals training. I have twenty-nine years' experience teaching university and community college physics, computer science and engineering, and seventeen years in management and technical development in private industry (engineering consulting, software development, electromagnetic properties of new antennas, network system implementations, mass storage, RFID/Video networks and network implementations, atmospheric physics and project management). For eleven years I was professionally devoted to IT work, managing software development teams and network implementations, both for my company and integrating our products with major corporate client legacy systems. My education in physics and mathematics proved to be of great worth in my computer work in private industry. For the past five years, I have introduced robotics term projects in physics courses, which have led to greatly improved student engagement, retention and academic success.

Education: Ph.D. in Physics, Duke University, Durham, North Carolina, 1972.
B.S. in Physics, Georgia Institute of Technology, Atlanta, Georgia, 1967.

Academic accomplishments:

- 2020 – Present Houston Community College, Elected to position of Program Coordinator Networking and Cybersecurity. Submitted prospectus for an Associate of Applied Science (AAS) award in Artificial Intelligence. This award has been approved by the Houston Community College Dean's Counsel, Curriculum Committee, President of Southwest College, Vice Chancellor for Instructional Services, Chancellor, and the Texas Higher Education Coordinating Board. The first courses are expected to be taught in Fall, 2020.
- 2019 – Present Houston Community College, Full-Time Instructor Networking and Cybersecurity. In this position, in addition to teaching duties, I am the lead faculty in establishing a new program for the award of Associate of Applied Science (AAS) in Artificial Intelligence.
- 2018 – Present Houston Community College, where I became an adjunct instructor of computer science. This position is in the Digital Information Technology Center of Excellence (DIT COE) of Houston Community College. My primary goal in moving from the Physics Department to the DIT is to contribute to the development and implementation of a robotics and artificial intelligence program in the DIT COE. This wave of new technology is really a massive refresh of the past computer science world as it begins to implement a complete array of new devices and valuable languages like C++, ROS (Robot Operating System),

Python, Go, Swift, etc. as well as new hardware like Small single board computers, Z-wave for mesh networks, GPU's for rapid processing of neural networks, sensor data fusion for real-time mapping and SLAM (simultaneous location and mapping) as the underpinnings of on-board and cloud based technologies that relate to robotics, the internet of things (IoT), machine learning, artificial intelligence and blockchain. My background is a perfect fit with the needs and challenges of dynamic systems on a massive scale.

- 2014 – 2019 Houston Community College and Lone Star College CyFair, added to the physics courses robotics term projects, explicit teaching in technique for problem solving (the Blender Algorithm®), student video reporting of lab reports and student team problem solving, and strong emphasis on student teamwork. These efforts were found to significantly enhance student retention and success in the courses.
- 2013 - 2014 Privately developed supplemental materials for physics teaching and tutoring. Materials developed included print, online documents and video files optimized for web and smart phone distribution. The intent was for use in courses and direct interaction with students.
- 2011 Summer Houston Community College, served as writer for parts of the Quality Enhancement Program (QEP) on Implementation of Instructional Development Best Practices, prepared as part of the Houston Community College application for reaffirmation of accreditation with SACS.
- 2009 – Present At Lone Star College CyFair, adjunct instructor of physics; at Houston Community College (Stafford, Alief, West Loop, Katy and Spring Branch campuses), adjunct instructor of physics, astronomy, engineering and mathematics.
- 2008 - 2009 At the University of Houston - Downtown, as a full-time adjunct instructor of physics. I redesigned physics teaching laboratories and teaching introductory courses. I introduced physics laboratory manuals for student use of Mathematica software for the computational tasks.
- 2006 - 2009 At Lone Star College Tomball, adjunct instructor in physics and mathematics.
- 2006 - 2008 The Banff School, Concordia Lutheran High School. Taught physics, mathematics, chemistry and computer science.
- 2004 - 2006 Morehouse College Atlanta, Georgia, **Scientific Program Coordinator**, for the Division of Science and Mathematics. Performed project management for Division educational grant programs, developed and published undergraduate learning modules in physics and materials science. Contributed to successful proposal efforts to external funding agencies. I performed project coordination for an NSF HBCU-UP grant.
- 1994 - 2004 Clark Atlanta University Atlanta, Georgia
  Chair of the Department of Physics, Associate Professor of Physics:
  Chair of the Department of Physics August 2001 - January 2004.
  Associate Professor of Physics November 1994 - July 2004.
  Undergraduate Program Coordinator, September 1998 - August 2001.
  Developed, implemented and taught online versions of seven (7) undergraduate physics courses, configured both for support of traditional courses and as distance learning courses. Developed and implemented training courses for faculty in the use of instructional technology.

Publications: Publications emphasizing web site support of teaching:

- *Two Points Define a Line*, a *Mathematica*® Demonstration for high school geometry teaching, published in http://demonstrations.wolfram.com/.
- *Coulomb Law Fields*, a module designed as a Peer Lead Teaching and Learning (PLTL) workshop in undergraduate introductory physics. Published in http://cnx.org/content/m13116/latest, a program of Rice University, author George Brown.
- *Coulomb Law Forces*, a module designed as a Peer Lead Teaching and Learning (PLTL) workshop in undergraduate introductory physics. Published in http://cnx.org/content/m12742/latest, author George Brown.

- *Analytic Solutions are Important in Introductory Physics Courses*, a short essay on undergraduate teaching, published in http://cnx.org/content/m12654/latest, author George Brown.
- *Interdisciplinary Sports Physics*, an interdisciplinary science module for the Clark Atlanta University Academic Preseason Program of 2001.
- *A Simple Physics Model in Teaching Introductory Physics Courses,* Clark Atlanta University Center for Excellence in Teaching and Learning (CETL) newsletter, March 2001.
- *Work and Electrostatic Potential: Path Integrals in Introductory Physics*, an Interdisciplinary Lively Application Project (ILAP), G. Raymond Brown and Alexander Fluellen, Consortium for Mathematics Applications (COMAP), reviewed and accepted for publication in the UMAP Journal, web published in http://www.projectintermath.org/docs/pathintegrals.pdf.

Presentations:

- *Using Computer Algebra Systems Software to Address Physics Education Problems*, University of Houston at Clear Lake, Physics Seminar, March 9, 2009.
- *Using Mathematica® and WebCT to Teach and Learn Physics*, UNCF Faculty Advancement Program in Technology, Clark Atlanta University, November 12, 2003.
- Building Courses in WebCT, Beginning WebCT, Using Microsoft Excel in Support of Courses, and other workshop presentations to University faculty and staff.
- *A Simple Physics Model in Teaching Introductory Physics Courses*, 122nd Annual Meeting of the American Association of Physics Teachers, San Diego, California, January 06 - 11, 2001.

Research:

- Physics education research, the development of video animated pedagogical tools for teaching physics. This research area expanded into more general visualization efforts, including medical (anatomical) subjects and visualization of mathematical objects such as special functions.
- Computer applications for teaching and learning physics (courseware) for use on the Internet, using the software *Mathematica®*.

Additional University Accomplishments:

- Developed innovative physical science, physics/calculus courses and materials science module content in support of core curriculum enhancements, using the software *Mathematica®*.
- Served as Chair of the Search Committee for a new faculty member in Chemistry/Materials Science at Morehouse College.
- Prepared the Assessment of Programs Report on five (5) degree programs in the Department of Physics at Clark Atlanta University in preparation for reaffirmation of accreditation of the University by SACS.
- Developed a draft module on polymers for the Materials World project, with the Materials Science Department of Northwestern University.
- Served as Co-Chair on the Search Committee for Director of Distance Learning and Continuing Education at Clark Atlanta University.
- Served as panelist for the National Science Foundation Graduate Fellowship Awards on the panel for Physics and Astronomy, years 2000, 2001, and 2002, Arlington, Virginia.

Proposal activities:

- Contributor to an NSF HBCU-UP proposal for Morehouse College, which was granted ($2.5M over 5 years).
- Represented Clark Atlanta University on the proposal team for the IceCube project (neutrino telescope in Antarctica). This involved a consortium of many institutions, headed by the University of Wisconsin Madison. Preliminary funding was obtained (approximately $10M). My contribution was primarily in educational aspects of the proposal.
- Co-Principal Investigator on a proposal to the Hogg Foundation, with Dr. L. Anne Hayman of the Baylor College of Medicine for visualizations of human anatomy, September 2002. (Funded $20K.)
- Received a mini-sabbatical grant from the Boeing Company to support visualization research work in the laboratory of Dr. R. Bowen Loftin at the University of Houston. (Funded $9K.)
- Grant award from the Boeing Company for equipment and other support for Interactive Video Animation for Learning Physics. (Funded $20K.)
- Was a principal in a grant award ($1.2M) entitled Strengthening Science Education at Historically Black Colleges and Universities, from the David and Lucille Packard Foundation.

Selected Private Industry Accomplishments:

In the positions listed below, I primarily served as a consulting engineer, at Dames & Moore in fluid mechanics (atmospheric applications) and at later positions as a software and customer service engineer.

- As Director of Systems at Lanier/ ML&M Services, I maintained and enhanced a wide area network (Netware), directed a staff of programmers, and oversaw customer technical services. Lanier/ML&M Services was a national medical transcription company with offices in 4 major cities. (1993 - 1994)
    - Lead a team of programmers maintaining and modifying a legacy medical records database of transcribed doctors' oral clinical reports. The database was Word Perfect scripts integrated with the legacy medical records software of major hospitals across the United States.
    - My employer was a national medical transcription services company with major hospital clients in New York, Boston, Atlanta, Chicago, Cincinnati, Denver, Los Angeles and San Francisco.
    - Responsible for integrating company software with a Netware LAN, connecting local transcriptionists, and the company WAN, connecting company offices in Atlanta, Boston, Cincinnati and San Francisco.
    - Lead a team of programmers maintaining and modifying a legacy medical records database of transcribed doctors' oral clinical reports. The database was Word Perfect scripts integrated with the legacy medical records software of major hospitals across the United States.
    - My employer was a national medical transcription services company with major hospital clients in New York, Boston, Atlanta, Chicago, Cincinnati, Denver, Los Angeles and San Francisco.
    - Responsible for integrating company software with a Netware LAN, connecting local transcriptionists, and the company WAN, connecting company offices in Atlanta, Boston, Cincinnati and San Francisco.

- As a private consultant, I designed and implemented computer systems for small business clients, primarily medical doctors and clinics. (1983 – 1985)
- As Project Manager for Dames & Moore, a privately held international engineering consulting firm, I performed approximately 60 atmospheric dispersion modeling projects for utility company and chemical company clients. Awarded Certified Consulting Meteorologist (No. 343) by the American Meteorological Society. (1977 - 1983)

Additional Community Based Activities:

2017 – Present – **USAi Labs, a Texas Non Profit** whose primary mission is to act as a conduit between Industry and Education regarding the proper implantation of the newest technologies through skill development, education and exposure to the newest practices and safeguards. The organization boasts some 3,000 members from all walks of industry and technologies. The organization is a service organization devoted to Ai, IOT, Machine Learning, all forms of Robotics (commercial grade and hobby level), consulting and R&D. Novice and Expert work side by side to build, enhance or develop capabilities that truly solve real-world problems.