

# Loretta H. Cheeks, Ph.D.

30634 North 129<sup>th</sup> Avenue ♦ Peoria, AZ 85383 ♦ Tel: (623) 298-5003 ♦ [loretta.cheeks@gmail.com](mailto:loretta.cheeks@gmail.com)

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## CAREER PROFILE

An accomplished Technology and Computing leader and research scholar with broad and deep expertise in large-scale systems and deep learning development—communications, radio, avionics, instrumentation & control and chemical industries for Fortune 500 corporations—using best-in-class architecture styles and platforms. Proven record of success in artificial intelligence, machine learning, and cognitive computing that transform data into solutions that drive long-term revenue growth and enhance organizational value.

A transformational thought leader, strategic thinker, speaker and research scholar, who combines the rigor for the appropriation of Artificial Intelligence and Machine Intelligence, the objectivity of Decision Sciences and a holistic Systems Thinking to develop new solutions, solve complex business problems, transform data for predictive, prescriptive and cognitive analysis, improve business processes and build world-class customer success.

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## EDUCATION

### **Ph.D. in Computer Science, *Arizona State University, Tempe, AZ, May 2017***

Dissertation: “Programmable Insight: A Computational Methodology to Explore Online News use of Frames”

Advisor: Dr. Ashraf Gaffar

### **M.B.A. in Technology Management, *University of Phoenix, Phoenix, AZ, July 2000***

### **M.S. in Computer Science, *Southern University, Baton Rouge, LA, July 1993***

Thesis: “Equipotentiality: Lesioning a Neural Network”

Advisor: Dr. Errol Hinds

### **B.S. in Computer Science, *Southern University, Baton Rouge, LA, July 1990***

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## SIGNIFICANT ACCOMPLISHMENTS

- Created an approach and model for unleashing deep meanings and discovering patterns in large-scale narrative text for gaining programmable insights in real-time and exploring influence and migration paths found in text, namely online news, using machine learning and artificial intelligence. Lead author on international journals and conference proceedings.
- Lead Architect for several Enterprise Services Solutions using best-class cloud computing enterprise platforms; 30% enterprise cost savings. Led the work capture of \$150 million collaboration for the U.S. secure, high-capacity global communications network. Developed the strategic road map of the Enterprise Services across divisions.
- Managed multiple complex communications projects ranging from \$1 million to \$80 million in scope for the design, fabrication and procurement of the \$7.3 billion Ground System of the Mobile User Objective System (MUOS) program, the US Department of Defense Next-Generation Mobile Satellite Communications System.
- Chief engineering and technical lead on the National Distress and Response System Modernization Project (NDRSM/Rescue 21), a \$650 million project that delivered secure IP and VoIP integrated command and control communication system. Primary interface between engineering, business managers, and U.S. Coast Guard.

- Founded Strong TIES, an IRS approved 501 (c)3 non-profit organization, that serves 700 middle and high school students annually with STEAM education during out-of-school time. Created curriculum, marketing strategy, and partnership agreements that supports delivery of quality and culturally-centered programs.
- Founded DS Innovation, a for-profit organization, that provides Artificial Intelligence consulting and thought leadership capabilities, training courses for solving national security real-world problems, and data-driven and practical engineering services in the areas of Artificial Intelligence, Machine Learning, Natural Language Processing, and Enterprise solutions.

## **SELECT AREAS OF EXPERTISE**

### **Research Scholar**

- Effective collaborator with interdisciplinary scholars for publishing cutting-edge scholarly manuscripts.
- Conceptualization of research for addressing water insecurity for precision modeling with considerations of social behaviors factors.
- Proven experience in data collection, data mining, machine learning, and complex dynamical systems that have wide spread value to domains in finance, health, politics, and environmental.
- Expertise in proposal writing for capturing funding of research and projects.

### **Technology Leadership**

- Proven experience growing and scaling a business while positively and effectively managing people to provide excellent service. Led cross-functional teams of sizes ranging from 25 to 200 individuals.
- Effective Change Management leader. Managed the integration of technical teams into a high-performing cohesive team; built and inspired a collective vision; led an innovative and accountable organizational culture, and stewarded over daily operations in pursuit of achieving that vision.
- Persuasive communicator, natural influencer and trusted advisor with a high level of emotional intelligence, who can work effectively with people from diverse levels and disciplines.

### **Enterprise Services, Managed and Business Development**

- Created specialized enterprise services for cross-organization to improve effectiveness and efficiency in functional analysis when developing workflows, enterprise software services, and business concepts using service-oriented architecture style.
- Delivered the value of satellite communications and RF technologies to help accelerate business.
- Exceptional ability to create winning proposals and define delivery structure, pricing methodologies, operational processes, SLA's and KPI's.

### **Engineering Operations and Process Improvement**

- Championed the development, standardization and operationalization of technical build documentation, and validation and troubleshooting checklists to increase the operational efficiency of Level II/III support teams.
- Expert software engineering change agent for process and product quality improvements. Led CMMI Assessment cross-functional teams and SEI Architecture Tradeoff Analysis Method (ATAM) evaluations for critical large-

scale systems projects. Demonstrated history of tackling the biggest challenges in an organization with the tenacity and the capacity to dive into the data extracting the nuggets of truth that escape casual observation.

### EMPLOYMENT

Strong TIES, Peoria, AZ, 9/2014 – Present  
**Chief Executive Officer**

DS Innovation, Peoria, AZ 9/2005 – Present  
**CEO/Executive Director**

**Research Scholar, University of South Africa External Examiner** Ph.D. candidates in Information Systems, 2018, 2019—paid position.

**Research Scholar, Arizona State University Comprehensive Examiner** Ph.D. candidate in Software Engineer, 2018, 2019, 2020—non-paid position.

Arizona State University, Tempe, AZ 8/2013 – 5/2017  
**Graduate Researcher**—The Center for Policy Informatics  
**Graduate Teaching Assistant**—School of Computing, Informatics, and Decision Systems Engineering  
**GEM Fellow, Adobe Foundation**

General Dynamics – C4 Systems (Formally Known As Motorola), Scottsdale, AZ 6/2000 – 6/2011  
**Principal Engineer**

Honeywell International, Phoenix, AZ 1/1997 – 6/2000  
**Senior Engineer and Technical Leader**

CBS-Westinghouse Electric Corporation, Pittsburgh, PA 1/1993 – 12/1996  
**Senior Engineer and Technical Leader**

Dow Chemical USA, Baton Rouge, Louisiana 1/1986 – 5/1989  
**Computer Analyst**

### TEACHING INTEREST

Human and behavior dimensions of artificial intelligence, social influence in complex dynamic systems, deep learning algorithms, machine intelligence, artificial intelligence ethics and policy.

### RESEARCH INTEREST

Exploring emerging patterns, migration paths, and social influence in unstructured text for gaining programmable insight about the production of language using data mining, machine learning, artificial intelligence, social influence models, and cultural dynamics models. My interest is to explore the embeddedness or internal structure of text for unlocking hidden structures and latent meanings to address real-world socio-environmental issues.

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## PUBLICATIONS

**Refereed Journal Articles**

Discovering news frames: An Approach for Exploring Text, Content, and Concepts in Online News Sources  
**Loretta H. Cheeks, Tracy L. Stepien, Dara M. Wald, and Ashraf Gaffar.** International Journal of Multimedia Data Engineering and Management (IJMDEM), 7 (2016), 45–62.

Modeling Double Subjectivity for Gaining Programmable Insights: Framing the Case of Uber  
**Loretta H. Cheeks, Ashraf Gaffar, and Mable J. Moore.** Advances in Science, Technology and Engineering Systems Journal (ASTES) 2017

(*Pending Publication*) Programmable Insight: A Visual Language for Expressing an Issues Network using Online News Frames  
**Loretta H. Cheeks & Ashraf Gaffar .** ACM Transactions on Interactive Intelligent Systems (TIIS) 2019

**Papers in Refereed Proceedings**

A Social Influence Model for Exploring Double Subjectivity Through News Frames in Online News Sources  
**Loretta H. Cheeks & Ashraf Gaffar.** IEEE Intelligent Systems Conference (IntelliSys) 2017.

Discovering news frames: Exploring text, content, and concepts in online news sources to address water insecurity in the Southwest Region

**Loretta H. Cheeks, Tracy L. Stepien and Dara M. Wald.** Proceedings of the 17th IEEE International Conference on Information Reuse and Integration (IEEE IRI 2016), Pittsburgh, PA, (2016), 454–462.

Exploring Double Subjectivity through News Frames in Online News Sources: A Network Approach  
**Loretta H. Cheeks and Ashraf Gaffar.** 11th International Conference on Semantic Computing 2017

Outreach Publication. Culturally-Centric Outreach and Engagement for Under-served Groups in STEM  
**Danielle Cummings, Loretta H. Cheeks and Rosario Robinson.** ACM SIGCSE, CS for All 2018

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## INVITED TALKS

**Southern University and A&M (2020).** Keynote for Engineers Week and AI Workshop Leader

**Defense Intelligence Agency (2020).** Keynote for Dr. Martin Luther King, Jr. Observance

**City College of New York (2019).** AI Art, Creativity and STEAM

**Karen Hunter Show on SXM Urban View (2019).** 2<sup>nd</sup> Appearance as Featured Guest on Tuesday Tech Talk

**The National Academies of Sciences, Engineering, and Medicine (2019).** Authentic STEM Learning for Computing

**South African Embassy (2019).** Building Capacity in S.A. Historically Disadvantage Universities: AI & STEAM

**National Science & Technology Medals Foundation (2019).** Decoding Bias in AI

**AI:Assembly (2019).** AI Risk and Consequences on Vulnerable Communities.

**O'Reilly Artificial Intelligence Conference (2019).** Social Influence Model and Migration Paths.

**Karen Hunter Show on SXM Urban View (2019).** Featured Guest on Tuesday Tech Talk

**TEDx Talk (2019).** Remembering: Intersecting Human Intelligence with Artificial Intelligence for Moving Forward.

**Workshop Leader (2019).** Arizona Public Service for Jobs for America's Graduates (JAG). POWERing Smart Cities Workshop.

**Building a Diverse and Skilled Tech Workforce (2019).** United States Capitol Hill

**Verizon International Women's Month (2019).** Featured Campaign Guest.

**Invited Speaker (2018).** Savannah State University Women's Leadership Conference (WLC). Artificial Intelligence: How It's Changing the World.

**Workshop Leader (2018).** Savannah State University Women's Engineering Technology Undergraduate Professional Mentoring Workshop.

**Invited Speaker (2018).** Tuoro University. Transforming Our Future: K-12 Culturally-centric Tools and Resources.

**Workshop Leader (2018).** Arizona Public Service for Jobs for America's Graduates (JAG). Energy and Electrical Circuit Workshop.

**Invited Speaker (2018).** East Valley STEM Alliance at Intel. STEMulating the Minds of Our Future.

**Panelist (2018).** Galvanize and Data Science PHX. Data Science and Ethics Panel: A Discussion with Local Data Scientists.

**Panel Facilitator (2018).** InfoSys Crossroads. From Makerspaces to STEAM Careers.

**Keynote Speaker (2018).** Girls Who Code-Fayetteville, GA.

**Workshop (2018).** GEM Annual Board Meeting and Conference. Transforming Our Future: Examination of K-12 Culturally-Centric Proven Approaches for Industry-Supported Programs

**Session Panelist (2018).** Grace Hopper Celebration. It's Never Too Late: Starting Your PhD After 30.

**Invited Speaker (2017).** Garden College Ghana West Africa, 2017

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## PRESENTATIONS AT MAJOR CONFERENCES / INSTITUTIONS

**Loretta H. Cheeks** and Ashraf Gaffar. A Social Influence Model for Exploring Double Subjectivity through News Frames in Online News. IntelliSys Conference (September 2017), London, United Kingdom.

**Loretta H. Cheeks.** Programmable Insight: A Computational Methodology to Explore Online News use of Frames. Garden City University College (July 2018), Ghana, West Africa.

**Loretta H. Cheeks** and Ashraf Gaffar, Exploring Double Subjectivity through News Frames In Online News Sources: A Network Approach. IEEE International Conference on Semantic Computing (January 2017), San Diego.

**Loretta H. Cheeks,** Tracy L. Stepien, Dara M. Wald. Discovering News Frames: Exploring Text, Content, and Concepts in Online News Sources to Address Water Insecurity in the Southwest Region. IEEE 17th International Conference on Information Reuse and Integration (August 2016), Pittsburgh, PA.

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## SERVICE AND CONSULTING

The **STEAM & Global Citizenship Mentoring Program** (*domestic and international travels*) gives underrepresented and underserved middle and high school girls the opportunity to intersect Science, Technology, Engineering, the Arts, or Mathematics (STEAM) with Global citizenship. This program afford girls to explore STEAM through the lens of global citizenship.—(Summer Months).

**Turn Up for STEAM Summer Camps.** Designated STEAM provider for State Farm Hubs —Phoenix, Bloomington, Dallas, Atlanta—(Summer Months).

**Turn Up for STEAM Annual Event.** Weekend event for introducing STEAM Phoenix middle and high school male and female students—(Spring or Summer).

**NBA Retired Players Association (Phoenix Chapter and Metro New York Chapter)**—(2019, 2020)

**Arizona Public Service (APS).** APS Energy Strategic Partner—(2018, 2019, 2020)

**Intelligence Community.** Artificial Intelligence solutions and education—(2020)

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## LEADERSHIP AND AWARDS

Elected Board Member, Science and Arts Engagement New York, 2019 to Present

Elected Board Member, Rehoboth Community Development Corporation, 2018 to Present

Elected Board Member for Arizona Center for Disability Law, 2011-2016

Elected Board Member for Community Information & Referral, 2007-2011

Appointed Expert Connect, National Science and Technology Medals Foundation, 2020 to Present

Appointed City of Peoria Police Department United Community Action Network (UCAN), 2011 to Present

Appointed Committee Member, Anita Borg Institute (ABI) Black Women in Computing (BWiC), 2014 to 2019

D&D 3-Dimension Speakers Certification, 2019

Onyx Pillar of Innovation Award, 2018

GEM Ph.D. Technical Competition Winner, 2016

NASA Datanauts, 2016

GEM Fellow of the Year, 2014

Women in Business Award, Phoenix Business Journal, 2011

Athena Award Nominee, Phoenix Business Journal, 2010