

## SOCIAL MEDIA WARRIOR: Q&A WITH DR. NITIN AGARWAL, UA LITTLE ROCK

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he rise of social media has transformed our society. We're more connected than ever, but we're also far more vulnerable to privacy breaches, cybercrime and misinformation. Arkansas Research Alliance Academy member Dr. Nitin Agarwal researches cyber information campaigns, social computing, deviant behavior modeling, group dynamics, social-cyber forensics, data mining and privacy.

### AMP: Briefly describe your research.

**Dr. Agarwal:** My research aims to push the boundaries of our understanding of digital and cyber social behaviors that emerge and constantly evolve in the modern information and communication platforms. In this pursuit, we attempt to study a wide array of behaviors that can be broadly categorized into the good, the bad and the ugly.

### AMP: What are the challenges presented by social media?

**Dr. Agarwal:** Social media is largely considered a positive vehicle of change. It has the power to lead sociopolitical transformation of authoritarian regimes to democratic systems or raise awareness and solidarity, whether it is the #metoo movement or gender-biased laws and practices in Saudi Arabia. Social media has been leveraged for public good, such as urban planning, developing and evaluating public policies, health policies, all of which feed economic development and keep the economy free to move.

However, in recent years, we also have seen a rise of the so-called deviant mobs, weaponization of information, radical and extremist groups, propaganda dissemination, misinformation, fake news

and the like. Our research sheds light on these variegated behaviors that manifest in digital and cyber spaces. This is a highly interdisciplinary research endeavor that lies at the intersection of social computing, behavior-cultural modeling, collective action, social cyber forensics, artificial intelligence, data mining, machine learning, smart health and privacy.

### AMP: Tell us about COSMOS, the lab you founded at UA Little Rock in 2014.

**Dr. Agarwal:** Collaboratorium for Social Media and Online Behavioral Studies — or COSMOS — is developing big data analytical tools to understand digital behaviors and forecast trends to achieve social good. Our mission is to conduct and communicate competitive research, inspire and train the next generation of researchers/innovators/entrepreneurs and thought leaders that contribute toward social good. Many research studies are currently ongoing at COSMOS that examine and advance our understanding of our social behaviors as they manifest in cyber and digital spaces. In 2020, the Arkansas Department of Higher Education recognized COSMOS as a research center that empowers us to further our mission and contribute to the technolog-

ical advancement of Arkansas.

### AMP: How is COSMOS elevating the state's intellectual profile?

We have more than 30 students (undergraduate and graduate — MS and Ph.D.) and post-docs in COSMOS, who are working on these cutting-edge research projects and gaining invaluable experience in working on real-world problems and acquiring next-generation workforce skills. The students are highly sought after as they receive multiple internship offers during their study that provide them opportunities to prepare for a real-world professional work environment. Upon graduation, they receive multiple job offers from academia and industry such as Walmart, Acxiom, Windstream, HP, LinkedIn, Amazon, to name a few. Readers of AMP should know that we'd love to keep them here in Arkansas!

### AMP: You've received grants from a number of government agencies, including the Department of Defense. Why are agencies like the DoD interested in your research?

**Dr. Agarwal:** We have several projects with a combined funding of more than \$15 million from an array of U.S. fed-

eral agencies including Army, Navy, Air Force, DARPA, Department of State, National Science Foundation and a long-term partnership between UA Little Rock and the Department of Homeland Security. These projects aim to develop capabilities that military operations need in order to manage and adapt to the information ecology and better understand the emerging sociotechnical behaviors when confronted with civil conflicts, crisis situations or executing humanitarian assistance and disaster relief operations.

Capabilities developed in these projects (Blogtracker, YouTubeTracker, COVID-19 misinformation tracker) assist the needs of the U.S. military, NATO Strategic Communications, European defense agencies, the Australian Defense Science and Technology agency, the Singapore government and the Arkansas Attorney General's office, among others. These tools are also part of the National Tech Innovation Hub launched by the U.S. Department of State's Global Engagement Center. We conduct training programs for DoD and allies to ensure mission readiness of our defense forces.

We aim to fill a critical research gap to understand the social dynamics underlying the deviant sociotechnical behaviors (e.g., stoking civil unrest, affecting civil conflict, disseminating propaganda, coordinating cyberattacks, coordinating cyber campaigns) to better support situation awareness, risk assessment, mission assessment, policy design (kinetic or nonkinetic) and for an overall mission effectiveness.

### AMP: What do you want the Arkansas business community and public officials to know about your research and how it's making a difference?

**Dr. Agarwal:** Digital communication is an integral part of our daily lives. For the first time, digital ad spending rose to 50 percent of all advertising in 2020, according to *The Wall Street Journal*. This is indicative of the tremendous potential of digital communication platforms. Therefore, understanding digital behaviors is even more important, which is exactly what our



Dr. Nitin Agarwal with ARA President/CEO Jerry Adams.

research aims to accomplish. The business community and public officials both benefit from our research in trend forecasting and proactive policymaking. This includes knowing which digital communication platforms are popular among a certain demographic or what is trending on these platforms on a real-time basis, or to identify fake or disparaging reviews about products or scams and misinformation.

Furthermore, by exposing our students to these cutting-edge research problems, we are training the next generation workforce that is capable of developing innovative solutions fueled by big data. Our research services are available and can be tailored for Arkansas-based companies and projects. This type of industry engagement helps convert research into jobs for Arkansas.

### AMP: How did COSMOS respond to challenges presented by the pandemic?

**Dr. Agarwal:** As the COVID-19 pandemic hit Arkansas, there was a surge in COVID-related misinformation and scams. We are conducting internationally recognized research on combating misinformation, so it was only natural to apply that work to the Natural State. Working with the Arkansas Office of the Attorney General, we developed a website ([cosmos.ualr.edu/covid-19](https://cosmos.ualr.edu/covid-19)) that allowed us to track such conspiracy theories, scams and false or misleading information. We worked with the AG's office to investigate and examine scams using our in-house

developed, cyber-forensics technologies. We shared the findings from our analysis with the AG's office on a daily basis and also made these reports available for the public through our website.

### AMP: What could COSMOS do with, say, astronomical levels of funding, and how could that benefit Arkansas?

**Dr. Agarwal:** Cyberspace is the new battleground where the war of ideologies is fought with tweets, bots and trolls as opposed to bullets, bombs and missiles. Combating misinformation and malicious behaviors requires an all-inclusive approach where technological innovations grounded in interdisciplinary ideas are coupled with educational programs in critical thinking and media literacy. Educators, researchers, policymakers, business community, practitioners, journalists, lawmakers and regulatory bodies across the state and the nation need to be involved in this pursuit. Not just astronomical but generational funding is needed to support this effort that would result in establishing a center of excellence with the mission of strengthening our social cybersecurity apparatus in Arkansas as the nation's first. ■

*Dr. Nitin Agarwal is a member of the Arkansas Research Alliance Academy of Scholars and Fellows, a community of strategic research leaders who strive to maximize the value of discovery and progress in the state. Learn more at [ARAlliance.org](https://ARAlliance.org). Dr. Agarwal can be reached via email at [nxagarwal@ualr.edu](mailto:nxagarwal@ualr.edu) or on Twitter at [@agarwalnitin](https://twitter.com/agarwalnitin).*