Computing, Communications, and the SDGs
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Computing and communication technologies intersect with the Sustainable Development Goals at many points and in many ways. First off, computing and communication technologies are explicitly mentioned as constituent components to the SDGs. Across the 17 Goals and 169 Targets of the [2030 Agenda for Sustainable Development](#), computing and communication technologies are referenced directly within seven Targets (and an additional seven Indicators as part of the [Global SDG Indicator Framework](#)). These direct references are made among targets for Quality Education (Goal 4), Gender Equality (5), Industry Innovation and Infrastructure (9), and Partnerships (17). The seven Targets are:

- Target 4a: Proportion of schools with access to the Internet for pedagogical purposes
- Target 4a: Proportion of schools with access to computers for pedagogical purposes
- Target 4.4: Proportion of youth/adults with ICT skills, by type of skills
- Target 5b: Proportion of individuals who own a mobile telephone, by sex
- Target 9c: Percentage of the population covered by a mobile network, by technology
- Target 17.6: Fixed Internet broadband subscriptions broken down by speed
- Target 17.8: Proportion of individuals using the Internet

Thus, computing systems are target elements in the realization of multiple development goals. More broadly, however, computing, communication, and information technologies are core systems necessary in *the tracking, analysis, and development of evidence for all of the Targets and Indicators*. Put simply, they are the basic tools the SDG community relies on when acquiring, compiling, and analyzing the various measures associated with the 17 Goals. How could we calculate global figures on the proportion of women in managerial positions (Target 5.5), for example, without powerful and capable computing systems?

Finally, computing and communication systems are often tools used in the realization of Goals and Targets that may not explicitly state their role. For instance, Target 3.3 looks to end the epidemics of AIDS, TB, malaria, and other diseases. Increasingly, mobile phone applications have been shown effective in disease surveillance, enabling drug supply chains and facilitating compliance, and so forth. Computing systems are core tools in the fight against these global diseases.

In my own laboratory, my students and I are exploring the roles of computing and communication technologies in the achievement of Goal 16: Peace, Justice and Strong Institutions. In a project launched this year, called Digital Threats to Democracy (DtD), we are creating new software platforms and real-world processes to help identify, track, and respond to digital threats to democratic development. In particular, we focus on hate speech and disinformation during election periods in emerging democracies. Our tools include new augmented AI systems to assist human trackers as they monitor multiple social media feeds in semi real-time.

The Digital Threats to Democracy project is investigating sophisticated online learning systems designed to assist trackers specifically in identification and monitoring of hate speech and disinformation. These machine learning engines help to focus trackers' attention on suspect posts, ensuring a more manageable process and enabling semi real-time response. The DtD project is also developing new systems to assist in analysis and traffic categorization for non-real-time reporting. These modules, for instance, can be used to provide daily or weekly reports of aggregate hate speech activity in the time period around a national election. Such reports could help inform the work of national election commissions, social media platform providers, and the international electoral observer community.

Our current research is focused towards a field deployment during the 2020 national election in Myanmar. Myanmar has experienced a recent explosion in mobile internet access. Enabled by this rise in network access has been a wave of disinformation, hate speech, attacks on free speech and human rights groups, and physical violence. The UN's independent international fact-finding mission on Myanmar has identified the significant negative role that hate speech and disinformation has played, especially when communicated across social media. This has been most evident in the use of social media to convey hate speech and coordinate attacks against linguistic and religious minority groups – accumulated actions which the United Nations labeled as genocide. This extreme social stress in Myanmar, the particularly fraught position of minority populations, and the specific and meaningful range of clearly identified digital threats underpin the relevance of this particular case study and field deployment.

Software text tools for the Myanmar majority Burmese language are immature and particular attention is being paid towards the development of more robust natural language systems. Even the font encoding for the Burmese language is not fully standardized, creating unique technical hurdles that we are addressing. These challenges are more extreme when considering many of the minority languages across Myanmar, some of which have no agreed digital encoding for their written script at all. While this initial NLP work will be targeted towards communication in Burmese, many of our findings should be generalizable and extendable to other languages and contexts, especially other low-resource languages like Burmese.

Ultimately the DtD project will create digital tools that help us reveal and track digital threats to elections, democratic institutions, and peace – offering yet another way that computing and communication technologies are impacting (not always in positive ways!) the realization of the UN Sustainable Development Goals.