

Online Deception Awareness and Resilience Training (DART)



Siwei Lyu

Natalie Bazarova Dominic DiFranzo Darren Linvill Anita Nikolich

siweilyu@buffalo.edu

Overview

The 54 million older adults (age 60 and up) in the US are particularly vulnerable and disproportionately targeted by online deception. DART is designed to improve the awareness and resilience of older adult users to online deception, such as spear-phishing and catfishing scams, personal information hunting schemes, fake content, impersonation, and mis/disinformation.

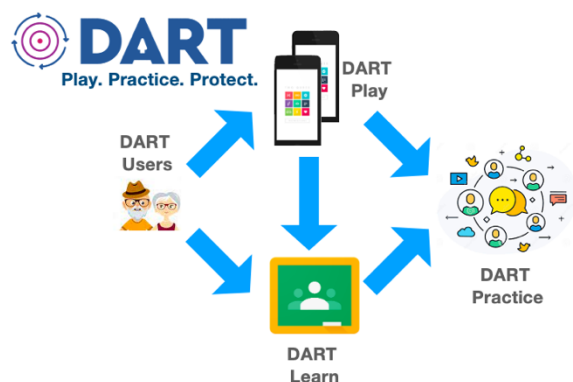


Figure 1: Overview of DART Components

Description

According to a recent FBI report, in 2021, those aged 60 and older comprised the majority of victims of various forms of online deceptions (more than 92,000 victims, accounting for 22% of all victims) with the highest total financial losses (~\$1.7 billion). This trend is growing at an alarming rate, with total financial losses jumping 74% from 2020. Through DART, we expect to achieve three general learning objectives for older adult users: (1) understand the motivation and impact of the specific type of online deception; (2) recognize its telltale signs, and (3) develop appropriate responses. DART comprises three interconnected components—DART Learn,

DART Practice, and DART Play. Together, they provide flexible and multiple pathways for older adults to learn how to protect themselves against online frauds and scams.

DART Learn is the backbone learning platform that presents a structured environment with feedback, adaptive guidance, and customization. DART learn will afford simple user interfaces to facilitate experiential learning while reducing the cognitive load of older adult users. DART Learn is web-based and can be accessed from older adult users' smartphones, tablets, and personal computers. The curriculum followed by DART Learn will be designed by our team of domain experts in education, gerontology, communication, cybersecurity, and media studies, with the topics and contents periodically updated to adapt to new deception schemes or technologies.

DART Practice simulates a situation of helping others avoid falling victim to online deceptions. This has the advantage to avoid users' psychological discomfort of becoming the victim of online deception themselves. An example scenario may entail the user persuading a friend to see through a potential catfishing scheme while exposing a fake Facebook account profile image created using AI algorithms. The users can use DART Practice to exercise what they learned in DART Learn.

DART Play is a suite of lightweight, engaging, fun games designed to meet the accessibility needs and game type preferences of older adults. The games provide an entertaining, effortless, and intuitive introduction to online deception themes and serve as an on-ramp to DART Learn and DART Practice. Online deception-related themes help people cultivate basic awareness of the concepts

and language of online deception. A unique feature of DART Play is the incorporation of the proven game design features of “reward mechanisms” and built-in “gameplay bonuses” that encourage players to stay engaged with the content.

Differentiators

While there are existing online media literacy training programs (e.g., MediaWise for Seniors) and gamified approaches for online disinformation and misinformation (e.g., Harmony Square, Bad News, Spot the Troll, BBC iReporter, The War on Pineapple, and Cranky Uncle), DART is an unprecedented system that combines the following features: (1) comprehensive coverage of a wide range of online deception schemes; (2) real world-relevant content updated as online deception schemes evolve; (3) development by professional game developers, including user experience (UX) experts, to ensure that DART is designed with input from older adults and for older adults specifically; (4) realistic simulation of social media environments and state-of-the-art media synthesis to emulate real-world online deception scenarios.

Road Map

DART deliverables will be developed using a software development lifecycle (SDLC) process. Major deliverable milestones are listed in the following:

Month 8: DART Play MVP completion.

Month 12: DART Learn MVP completion.

Month 16: DART Practice MVP completion.

Month 24: Completion of the products of all three DART components.

Partnerships

DART will be developed by an interdisciplinary team with both depth of research expertise and a breadth of experience in multidisciplinary collaborations and community outreach. The emphasis on the deliverable of tangible software systems necessitates the inclusion of a team of

professional software/game developers, creatives with expertise in UI/UX design and art/sound, and promotional materials production.

We will also collaborate with local and national older adult serving organizations, including **Amherst Center for Senior Services** (west New York), **Clemson Downs** (South Carolina), to help “spread the word” about DART. Furthermore, our local partners, Clemson Downs, Amherst Center for Senior Services, and the **Buffalo and Erie County Public Library** will also serve as local user community liaisons for us to recruit older adult users for focused group interviews and usability feedback, and to host community outreach workshops and demonstrate DART through facilitated sessions.

Intellectual Property

Software created with DART funding that is intended to be released under an open-source software (OSS) license is encouraged by the team but not required to be released under an attribution style license, with a preference for BSD, MIT licenses, and Apache, using GitHub.

Additional Information (optional)

PI Lyu is a global leader in synthetic media and media forensics research and has testified at the US Congress House of Representatives and New York State Assembly and served on a panel for the Federal Trade Commission on the spread and mitigation of online synthetic media. Co-PI Linvill and Consultant Warren developed the successful Spot the Troll quiz, which has been used by over a million users for online disinformation education, and their work in understanding social media disinformation has been cited by the US Senate’s Select Committee on Intelligence. Co-PIs Bazarova and DiFranzo have successfully developed several online media literacy training platforms. Their Social Media Test Drive has been used by more than half a million users, has been integrated into Common Sense’s Digital Citizenship curriculum, and has been implemented in hundreds of schools across the US.