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Prime III: Printing Optical Scan Ballots

Abstract

In recent national elections, the accuracy of some methods used to tally votes has come under scrutiny. For example, due to the design of the punch card voting system, Florida election officials in the 2000 Presidential race were not able to determine the intent of many voters. This, along with a poor ballot design, led to many ballots being tossed out and not counted (Levine, 2008). In 2010, the write-in Republican candidate Lisa Murkowski won an intense Alaska Senate race. Her closest competitor, fellow Republican Joe Miller, challenged the hand counted ballot results stating, "The state should count only those ballots written exactly the way Murkowski registered her write-in candidacy" (Rosen, 2010). In other words, Miller believed that election officials should only count write-in votes that showed either "Lisa Murkowski" or "Murkowski".

The controversies of the 2000 election, lead to the U.S government passing the Help America Vote Act of 2002 (HAVA). The purpose of this legislation was, among others, "To establish a program to provide funds to States to replace punch card voting systems" (Help America Vote Act, 2002). As a result, punch card voting systems have almost been phased out of U.S elections. According to VerifiedVoting.org, in the 2012 elections, six (6) states, the District of Columbia and Puerto Rico only used electronic voting machines, also called direct-recording electronic (DRE) machines. In this same election cycle, seventeen (17) states used only paper ballots, one (1) state used a combination of paper ballots and punch cards, while the rest used a combination of paper ballots and DREs (VerifiedVoting.org, 2012).

When using paper ballots voters use a writing instrument, usually a marker, to fill in ovals next to the candidates of their choice. These filled in ovals represent a vote for that candidate. The largest problem with this method is that it is difficult to discern a voter's intent. What if a voter only fills in the oval partially? What if they mistakenly make a stray mark on the ballot? If a person fills in an oval, crosses it out and makes another selection, how would that be counted? The answers to these questions vary across the country. In some places they are governed by law. In others, the determination is left to the counting machine or, in the case of a manual recount, the people viewing the ballot. All of these issues could lead to a voter's selection not being counted.

When using DRE machines, voters make selections on a ballot using a touch screen or point/click device on a computer. When it is time to count these votes DREs

> …offer various configurations for tallying the votes. Some contain removable storage media that can be taken from the voting device and transported to a central location to be tallied. Others can be configured to electronically transmit the vote totals from the polling place to a central tally location. ("Federal efforts to…" 2005).

The problem with DRE machines is that because all votes are stored electronically, there is no way to determine the validity of the vote totals. If an audit is conducted, the machine will print out totals based on the votes cast on that particular machine. There is no way to determine that the votes that were cast match the numbers printed by the machine.

Because of these issues in this poster we present, the Prime III voting machine. Prime III has been configured to print a marked paper ballot. When a voter uses Prime III, he or she will use a touch screen, their voice or a haptic switch to make ballot selections in a manner similar to using a DRE machine. However, instead of the vote being stored on the machine, a marked paper ballot will be printed. Similar to the ballots completed by hand, however this marked ballot will contain computer filled ovals. Unlike the "by hand" ballots, the ballots printed by Prime III will contain marks that fill the ovals completely and there will be no stray marks on the side. Because the ballot is not printed until the voter has confirmed his/her selections, Prime III only prints the voter's final choice. Printing marked ballots clearly depicts the voter's intent and leaves no room for ambiguity. Printing also allows for manual ballot counts to be conducted. This approach will significantly reduce, if not eliminate, election tally differences between voting tally machines and manual recounts as well.

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