

DNAShot: an application to Blast DNA Sequence from photos using smart-phone

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The growing use of smart-phones in the most common tasks enhances ever more due to the increased availability of applications developed for these devices. In Bioinformatics this trend is not different, due the emergence of applications to process and display biological information for smart-phones and tablets. However, the ability to interact with non-responsive sites with these devices is limited to the use of native browsers. The DNAShot app is a new smart-phone application that recognizes DNA sequences from images. DNAShot is an iOS and Android OS based application. An OCR module converts pictures taken by built-in camera to a text format and then submits it to the NCBI site for Blastn task within nr/nt database and the top 10 hits are shown in a result list. This feature is useful in tasks like to determine the species of the organisms whose nucleotide data are not available to be uploaded or pasted in a browser. DNAShot can also handle stored DNA sequences images from memory card and/or from the Cloud. The search using the DNA Shot are accurate, as the tests showed when recovering known sequences from the NCBI database. The response time was also acceptable, once it depends mainly on the processing capability of the mobile device to convert the image and the availability of the Blast NCBI web service. DNAShot app brings mobility and efficiency to researchers since it can be used anywhere, anytime, as long as there is an Internet connection, offering new ways to support Bioinformatics and Biology researchers in a wide range of new situations. The authors thank to partnership between UFPR and UFMG Bioinformatics Graduate Programs and the financial support of Brazilian funding agency (CAPES).