



Bharatiya Vidya
Bhavan

Bhavan's Vivekananda College

of Science, Humanities & Commerce
Autonomous College - Affiliated to Osmania University
Accredited with 'A' grade by NAAC
Sainikpuri, Secunderabad - 500094



NAAC RE-ACCREDITATION - 2ND CYCLE

Criterion VII

Institutional Values and
Best Practices

7.1.7

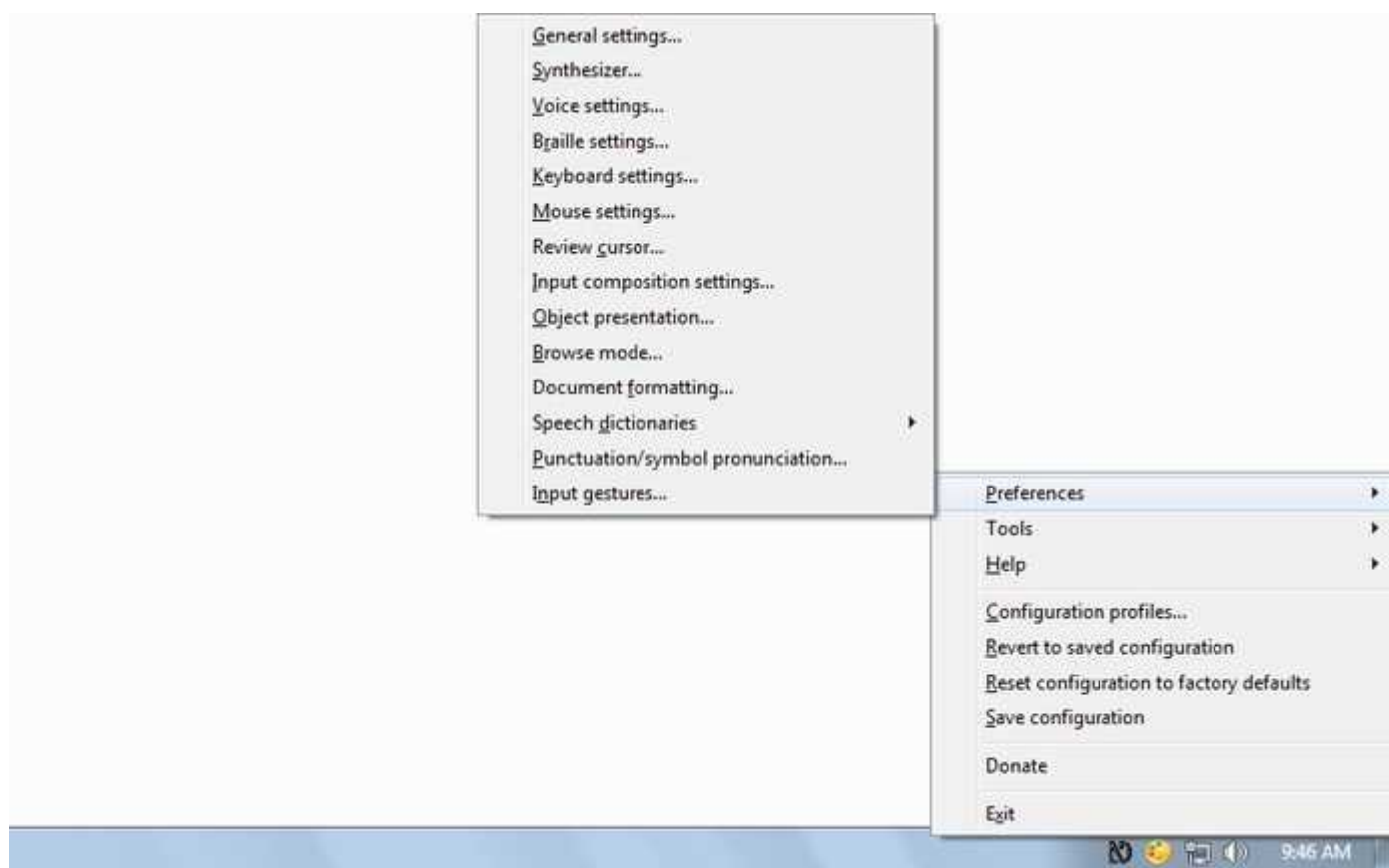
Divyangjan Facilities
Assistive Technology

Submitted to

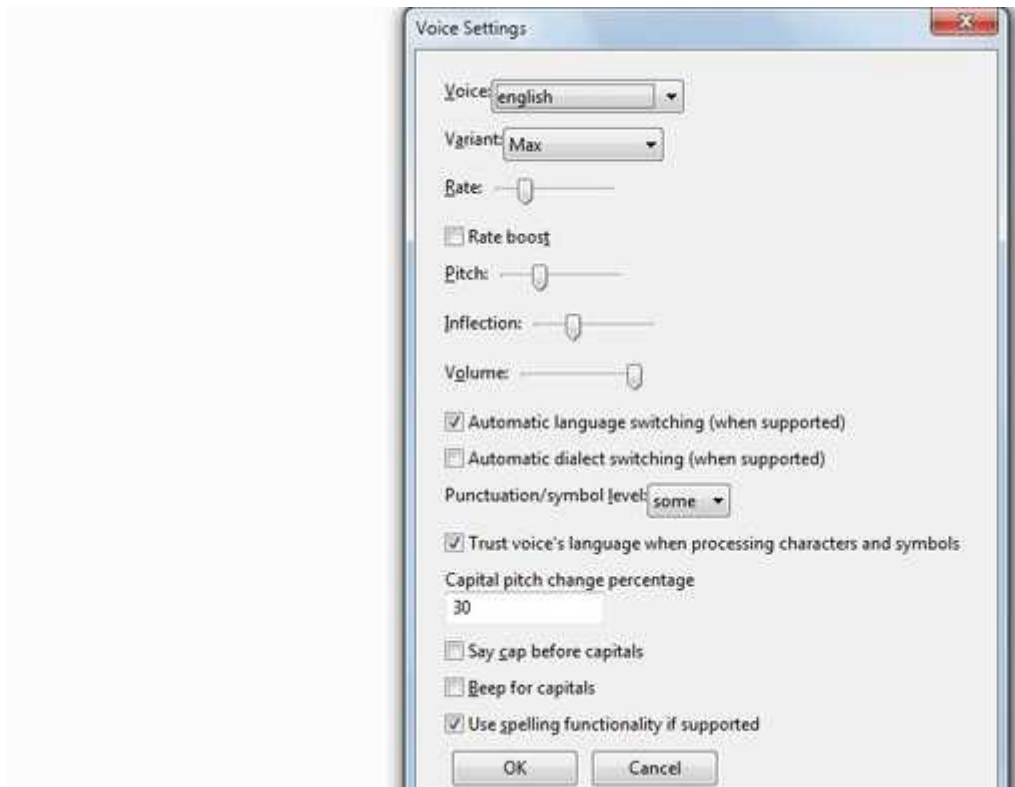
National Assessment and Accreditation Council

NVDA Screen Reader

Screen readers make it very easy for a blind or visually-impaired person to use a device by simply listening to everything happening on the screen. For this purpose, [NVDA](#) (Non-Visual Desktop Access) is an amazing screen reader that is both robust and completely free to use. Downloading and installing NVDA on your device may require assistance as a new user (the installer also talks), but once everything is set up it will automatically start in the PC to guide you. It will read everything your mouse hovers over and whatever you type, allowing you to easily use your PC.



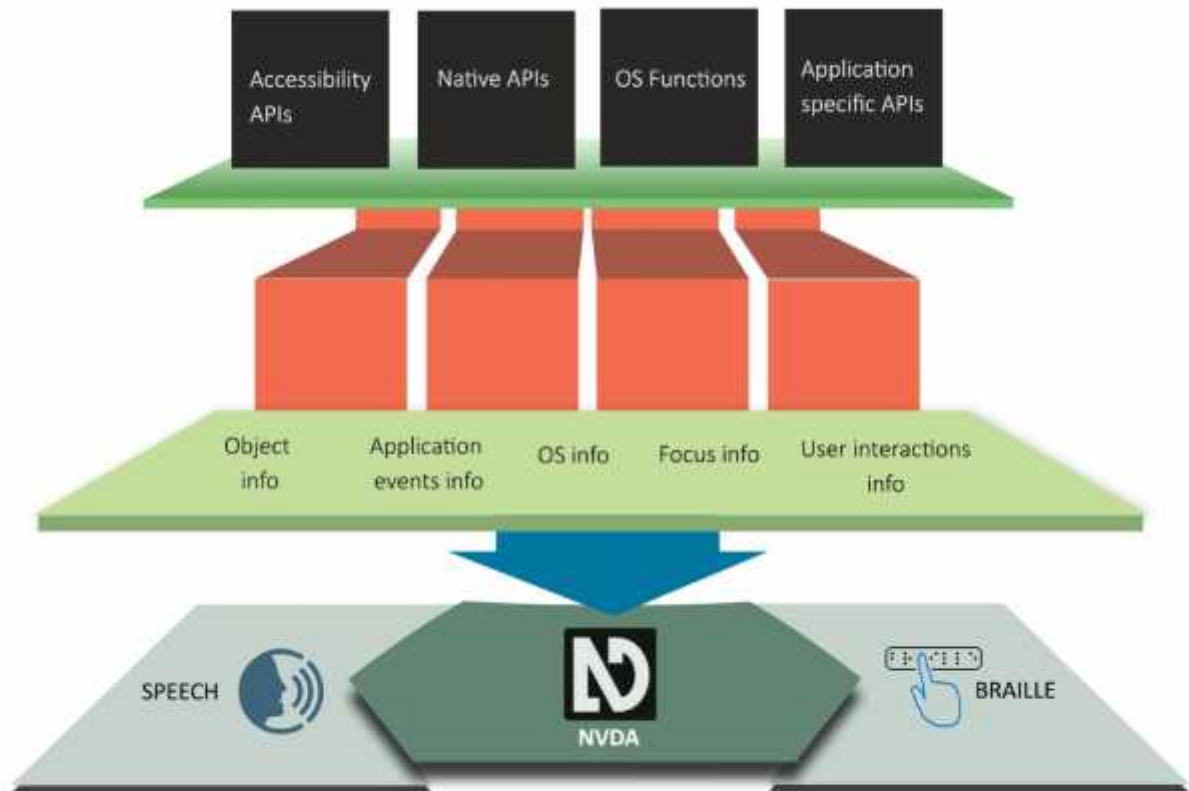
It works fine with many of the popular applications, including browsers. You can use it to open and browse the Web, and it will read everything to you. Its options allow control over voice type, pitch, speed and volume to configure it according to your needs. I tried using the tool with my eyes closed and quite easily navigated this website and opened and read a few articles. In my experience it will consume extra time if you are only using your mouse to navigate the Web. You should also try using keyboard shortcuts and arrow keys to quickly complete most tasks without having to find them with the cursor.



NVDA can also be configured to work with a braille display (if you own one). Furthermore, it comes with forty-three languages with an automatic language switch to make it easier to navigate in your own language. You can add more features using [NVDA add-ons](#), like controlling the mouse with the keyboard, saving locations or reading emoticons. Best of all it also has a portable version allowing you to keep it in your USB drive and use it on any PC right from the USB.

Do also check out the [various screen readers for each OS](#).

INFORMATION FLOW DIAGRAM



HOW IT WORKS ?

NVDA fetches information about GUI widgets, textual data, events, user interactions and OS events with the help of:

Accessibility APIs: These are special purpose APIs that provide information about the graphical widgets such as name, type/role, description, value, states, etc. Accessibility APIs also provide events to allow assistive technologies to monitor object's properties changes. Accessibility APIs include Microsoft Active Accessibility (MSAA), IAccessible2, Java Access Bridge and UI Automation.

Native APIs: If application does not expose sufficient information via accessibility APIs but expose information via native APIs (not specific to accessibility) then these APIs can be used. For ex: Win32

Application Specific APIs: A lot of applications also provide APIs of their own to expose information about the components and events of the application. For example COM (Component Object Model) API for Microsoft Excel.

OS Functions: Windows OS provides many functions to obtain system information and perform tasks. Information that can be obtained includes the class name of a window, the current foreground window, window location, process or thread ID.

NVDA FEATURES

- J Open Source s/w- NVDA is open source, that is, it is available for free to users. Also users can create modules of their own and use them.
- J Braille- provides output to user in Braille format
- J Speech- provides output to user in audio format
- J Indian Languages- provides support for 12 Indian languages
- J Portable- NVDA can be installed directly on to your computer, but it has the ability to run entirely from a USB stick or other portable media.
- J Speech Engines - is bundled with eSpeak, a free multi-lingual speech synthesizer. Additionally, it can use both SAPI 4 and SAPI 5 speech engines.

SYSTEM REQUIREMENTS

NVDA runs on both 32-bit and 64-bit editions of Microsoft Windows XP or later. NVDA has no additional hardware requirements beyond those of the operating system and requires around 50 MB of disk space.

NVDA is bundled with eSpeak, a free multi-lingual speech synthesizer. Additionally, NVDA can use both SAPI 4 and SAPI 5 speech engines.

NVDA IMAGE DESCRIPTION ADDON

Overview

When browsing across the internet, many times we come across images without any alternate text. This causes NVDA to simply mention it as a graphic without any description. This add-on has been written to provide description for such graphics. The add-on uses Microsoft's Computer Vision cognitive API to get a description of the image provided to it. The add-on works for the Internet Explorer, Mozilla Firefox and Chrome (Canary version) browser as well

Installation

System Requirements

1. Windows operating system
2. NVDA screen reader
3. If using with Chrome browser, use Chrome Canary

Instructions

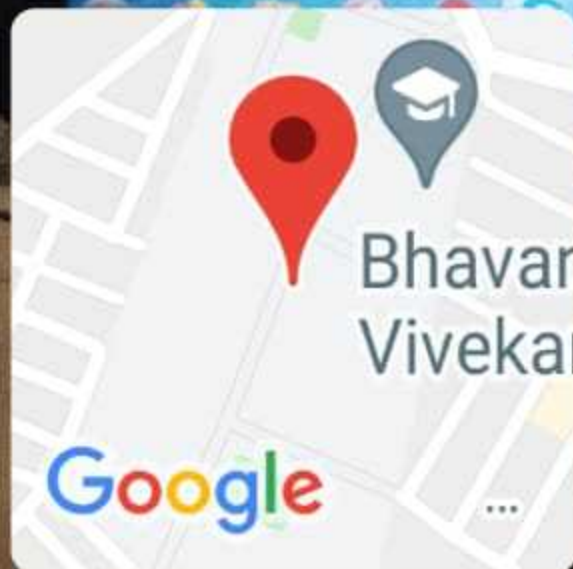
Step 1: Generate a subscription key for using Microsoft Computer Vision cognitive API from the [link](#). Please note that the key has to be created for the Computer Vision API.

Step 2: Download and Install the NVDA Addon named DescribeIt. For Addon installation instructions visit [link](#)

Step 3: From the add-on menu (the add-on menu is named as Assistech_IIT_Delhi), select the options add API key and provide your subscription key for the cognition API.

Step 4: If you are behind a proxy, from the add on menu, select the options add proxy details and provide your proxy IP and port. Step 3 and step 4 only need to be performed the first time or whenever either of your proxy details or subscription key changes.

Step 5: While navigating a webpage, whenever a graphic is encountered and is in focus, use keyboard shortcut NVDA+g. The image description and the confidence level returned by the API are provided as audio output. Use NVDA+gg to get the results (including the dominant colors present in the image) in a browseable message box. (Fetching results takes a few seconds.). If no result is obtained from API, appropriate speech message is returned.



Secunderabad, Telangana, India

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Secunderabad, Telangana 500094, India

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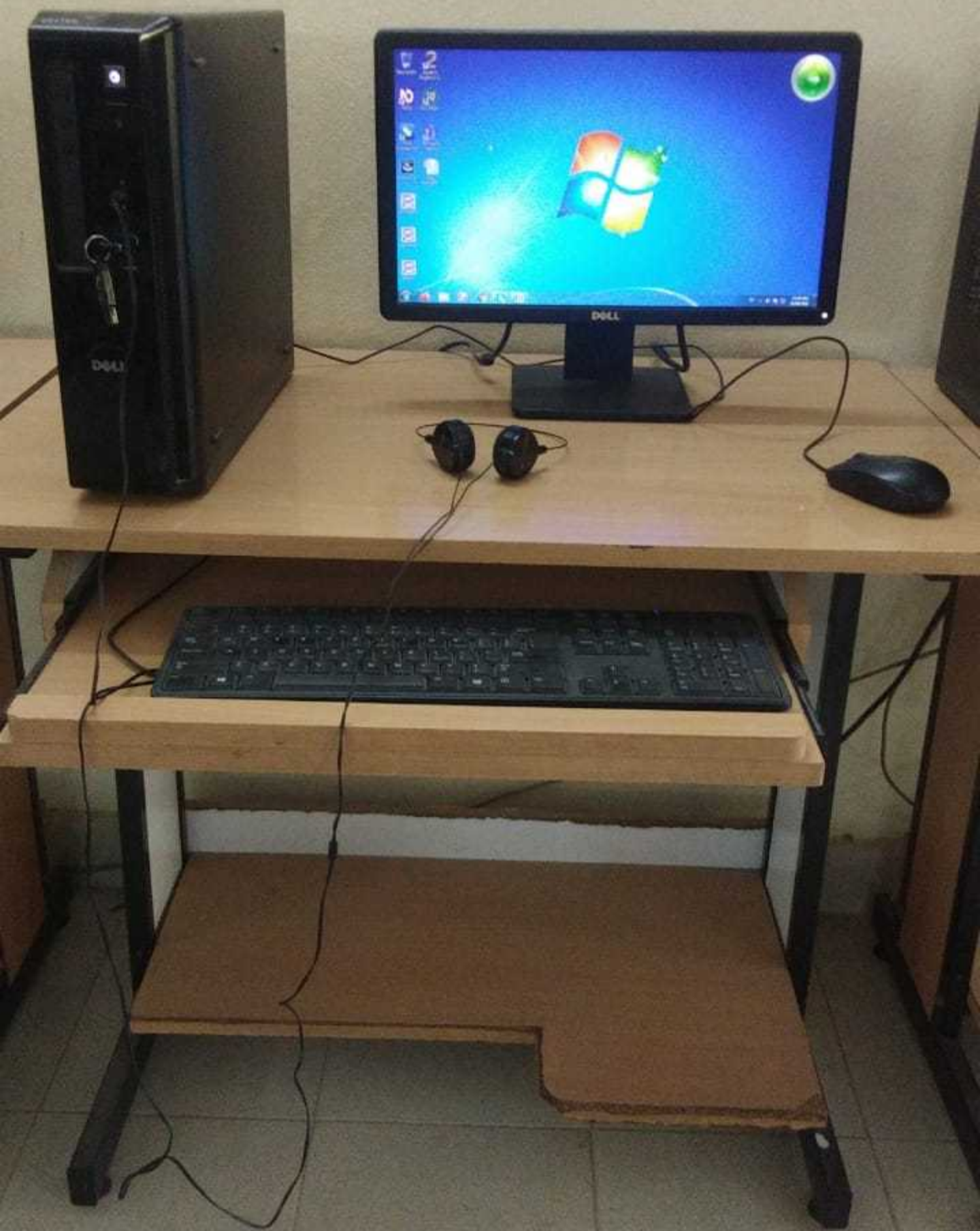


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DELL

NVDA

(Non Visual Desktop Access)



NVDA

(Non Visual Desktop Access)



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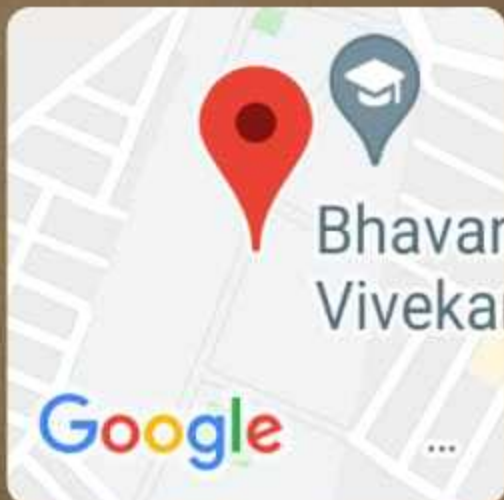
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NVDA

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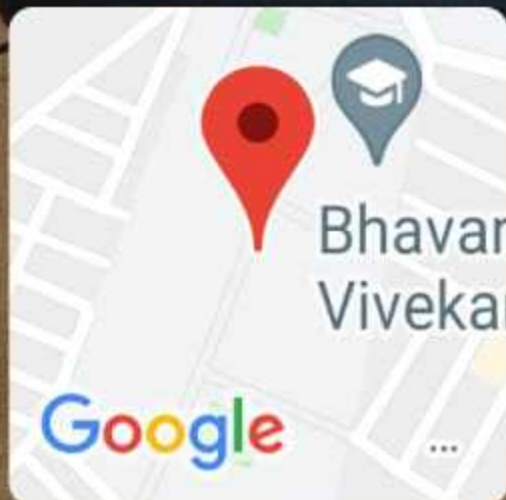
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NVDA

(Non Visual Desktop Access)



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Sainikpuri, Secunderabad, Telangana 500094, India

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