EZEyes Application Manual

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Version 1.0

June 3rd, 2024

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1. Introduction

This guide introduces an innovative solution designed to enhance the reading experience for individuals with Traumatic Brain Injury (TBI) and visual impairments. Our tool aims to reduce visual strain and neurological stress, allowing users to engage with text more comfortably and for longer periods. By focusing on minimizing saccadic eye movements through a unique text display method, we provide a more accessible and enjoyable reading experience.

1.1 Purpose

The primary purpose of this reading enhancement tool is to facilitate a more accessible and enjoyable reading experience for individuals facing challenges due to Traumatic Brain Injury (TBI) and visual impairments. Reading, a fundamental activity for learning, entertainment, and daily living, can often present significant obstacles for those experiencing visual strain and cognitive difficulties. Recognizing these challenges, our solution is specifically designed to:

- **Minimize Visual Strain:** Traditional reading requires constant eye movements and adjustments, which can quickly lead to fatigue and discomfort, particularly for individuals with TBI or visual impairments. Our tool reduces this strain by presenting text in a manner that requires minimal eye movement, allowing for a more comfortable reading experience.
- **Reduce Neurological Stress:** The cognitive load of processing text can be overwhelming, especially for TBI survivors who may experience difficulty in concentration and comprehension. By simplifying the visual component of reading, our tool aims to lessen cognitive demands, making reading a less stressful activity.
- **Enhance Accessibility:** Accessibility in reading is not just about making text larger or more readable; it's about rethinking how text is consumed to accommodate diverse needs. By displaying text one word at a time and allowing for customization in speed and size, we open up new opportunities for individuals who might otherwise find reading to be a daunting task.
- **Empower Users Through Customization:** Recognizing that one size does not fit all, especially in the context of disabilities and impairments, our tool is designed with flexibility in mind. Users can tailor their reading experience to match their personal preferences and needs, fostering a sense of independence and control over their engagement with text.

1.2. Scope

The scope of our reading enhancement tool, designed to support individuals with Traumatic Brain Injury (TBI) and visual impairments. The tool's development is guided by a commitment to accessibility, user comfort, and customization, aiming to provide a solution that addresses specific challenges faced by our target user groups.

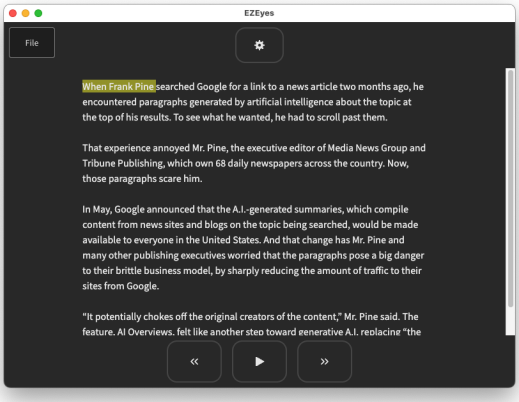
1.2.1 Target User Groups

The EZEyes application was designed with two primary user groups in mind, namely:

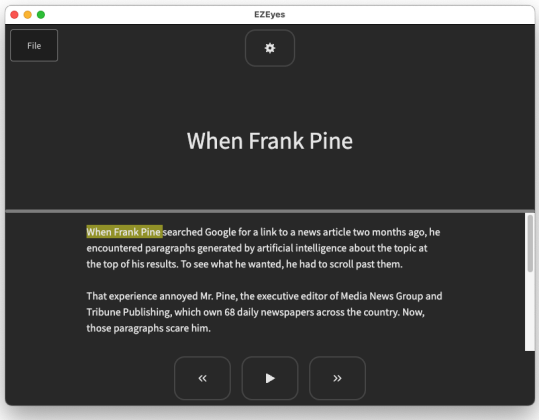
- **Individuals with Traumatic Brain Injury (TBI):** The tool is specifically designed to assist TBI survivors who experience difficulties with traditional reading methods due to cognitive overload, concentration issues, and visual tracking challenges (i.e., saccadic dysfunction).
- **Individuals with Visual Impairments:** It also caters to those with visual impairments that make reading standard text difficult, including conditions that affect visual focus, clarity, and endurance.

2. Key Features

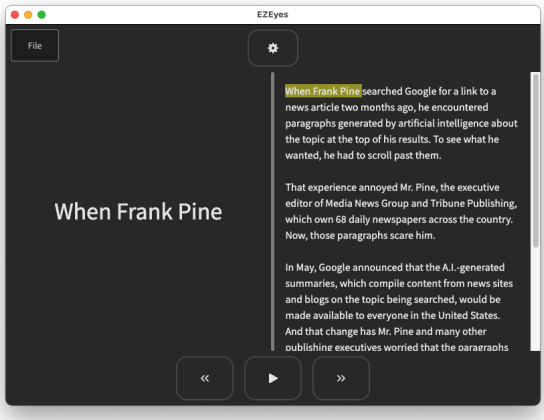
- **User-defined word sequence display length**
  - Users can adjust the number of words to display at one time in the Reader Display Panel to their liking in the settings. Word sequence lengths of 1 and beyond are supported.
- **Customizable Text Speed**
  - Users can select between **Assisted** and **Normal** text speeds to match their reading capabilities and preferences. The **Assisted** text speeds offer a much lower range of speed choices, which makes it ideal for users suffering from saccadic dysfunction. The **Normal** text speeds offer much higher speed choices and are recommended for ordinary speed reading activities.
- **Adjustable Text Size**
  - Users can adjust the font size of both the Text Input Display Panel and Reader Display Panel. Font sizes can be any value greater than or equal to 1.
- **Four Supported Panel Views**
  - Flashcard View



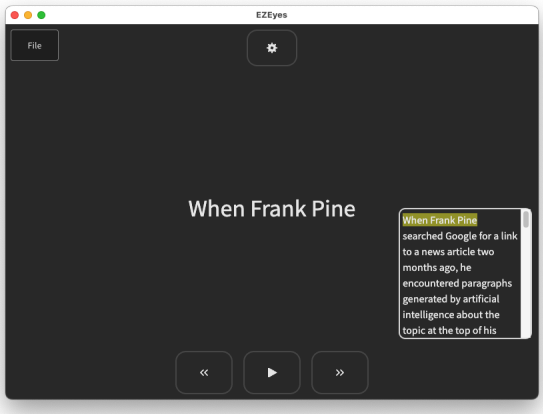
- Vertical View (displayed)



- Horizontal View



- Zoom View



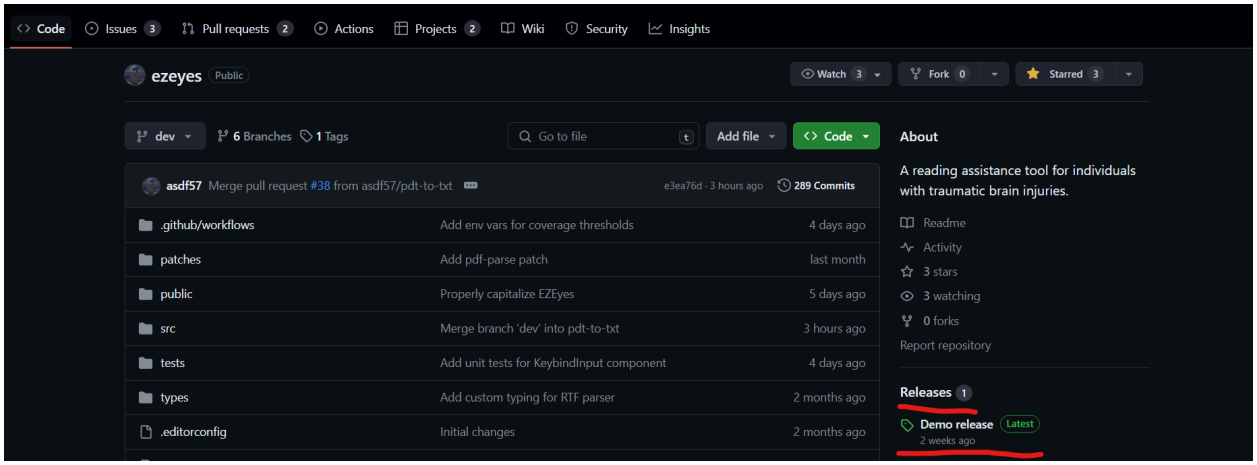
- **Keybinding system**
  - Play/pause

    - Next word
    - Previous word
    - Open settings menu
    - Switch panel view
    - Import file menu
    - Previous paragraph
    - Next paragraph
    - Previous sentence
    - Next sentence
    - Flip flashcard
    - Back to top
    - Search
    - Increase text speed
    - Decrease text speed
    - Open help/tutorial
- **Play and pause of the text reader**
    - Playing and pausing of the text panels using either the designated keybind or the play/pause button.
- **Import document**
    - DOCX
    - PDF
    - TXT
    - RTF
- **Selecting word sequence within text using mouse cursor**
    - Users can select a word in the Text Input Display Panel by clicking on it with their mouse. The application will then calculate the new current word sequence starting from the selected word.
- **Text highlighting and tracking**
    - Highlights the currently selected word sequence in the Text Input Display Panel in a high-contrast color (yellow by default).

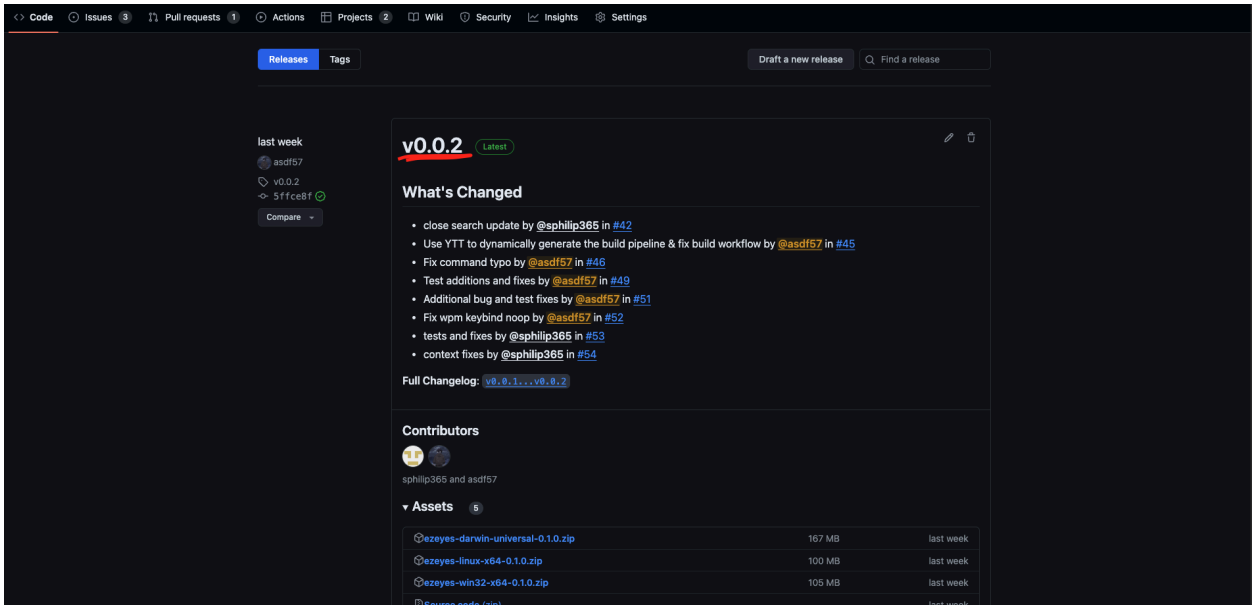
3. Installation

3.1. First Time User Installation

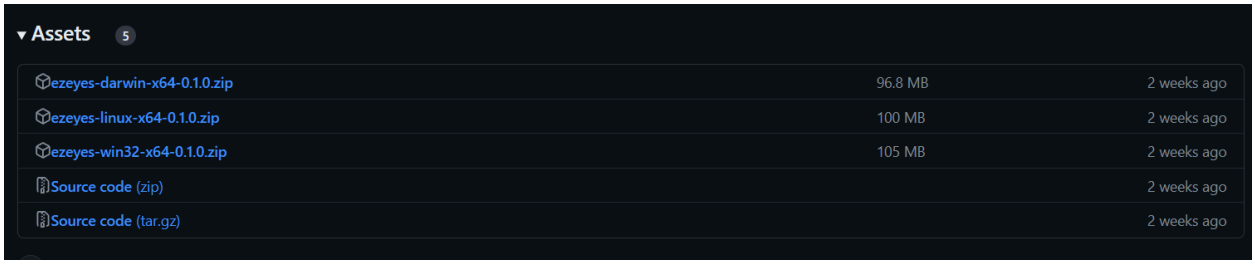
Step 1: Navigate to https://github.com/asdf57/ezeyes and click on “Releases” at the bottom right side of the screen (shown below)



Step 2: Click on a release version



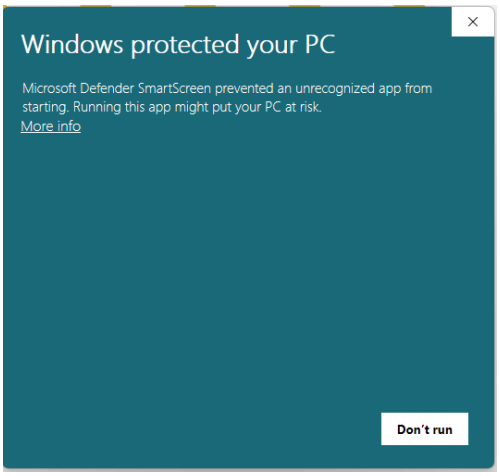
Step 3: Download the zip file corresponding to your computer’s operating system



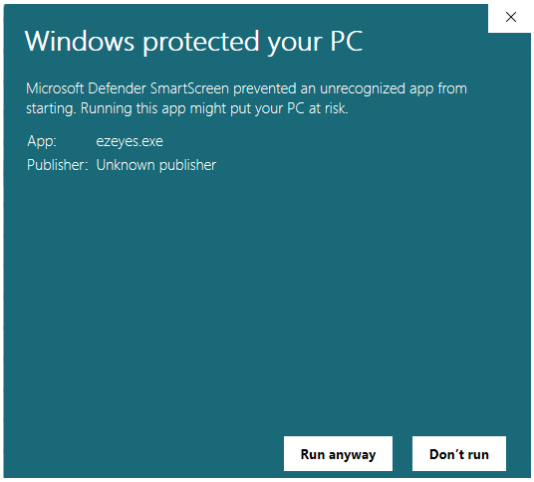
Step 3: Unzip the file and locate the EZEyes application. Launch it using whatever means are provided by your operating system.

3.1.1 Windows Troubleshooting

For Windows users, a one-time setup process may be required if the following popup occurs when attempting to launch the EZEyes application:

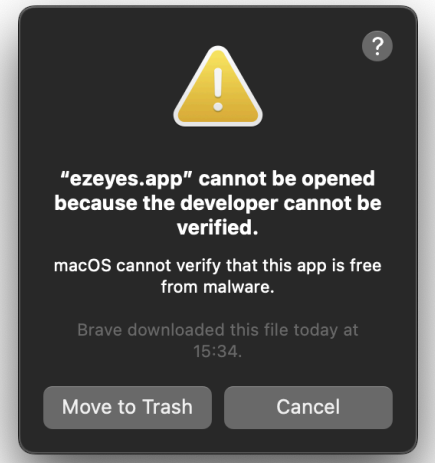


If this popup occurs for you, click on the **More Info** text in the popup and then select the **Run Anyway** option.

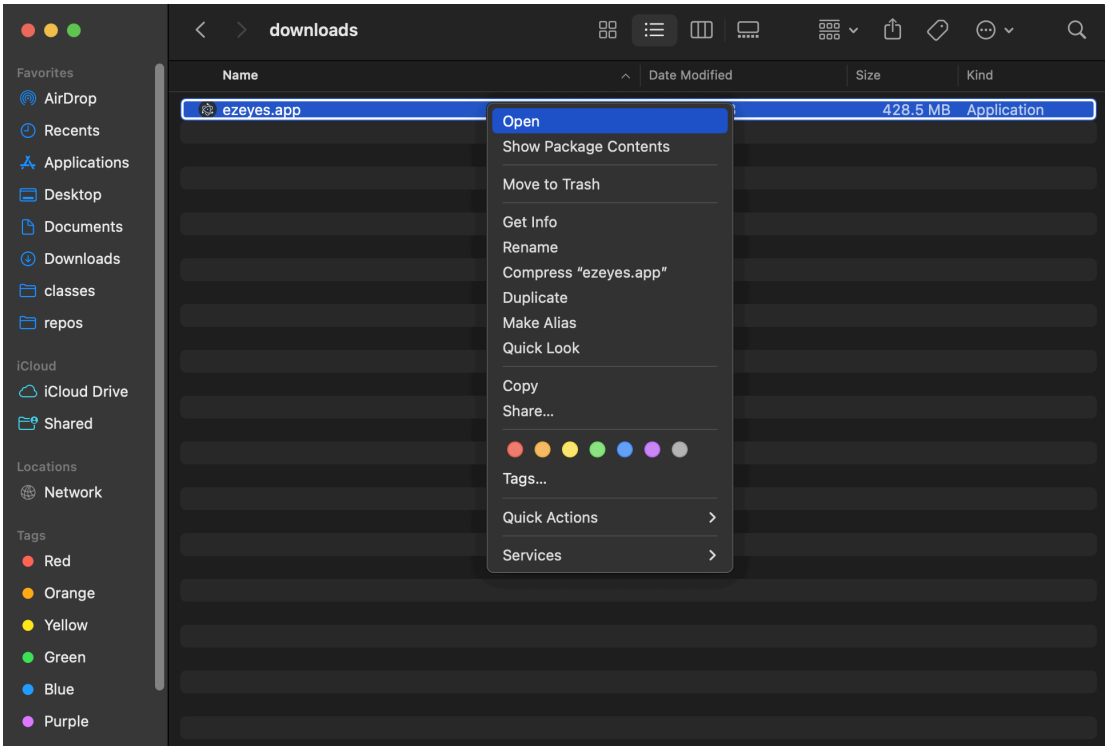


3.1.2 macOS Troubleshooting

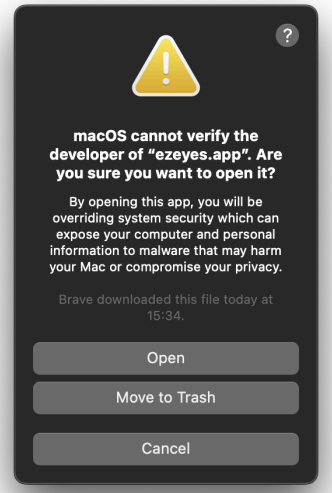
For macOS users, a one-time setup process may be required if the following popup occurs when attempting to launch the EZEyes application:



If this occurs for you, first click **Cancel** and then hold the **Control** key on your keyboard and single-click on the EZEyes application file again. This should prompt you with a series of menu options like in the image below:



Click on **Open**, which should then bring up a pop-up like in the below image:

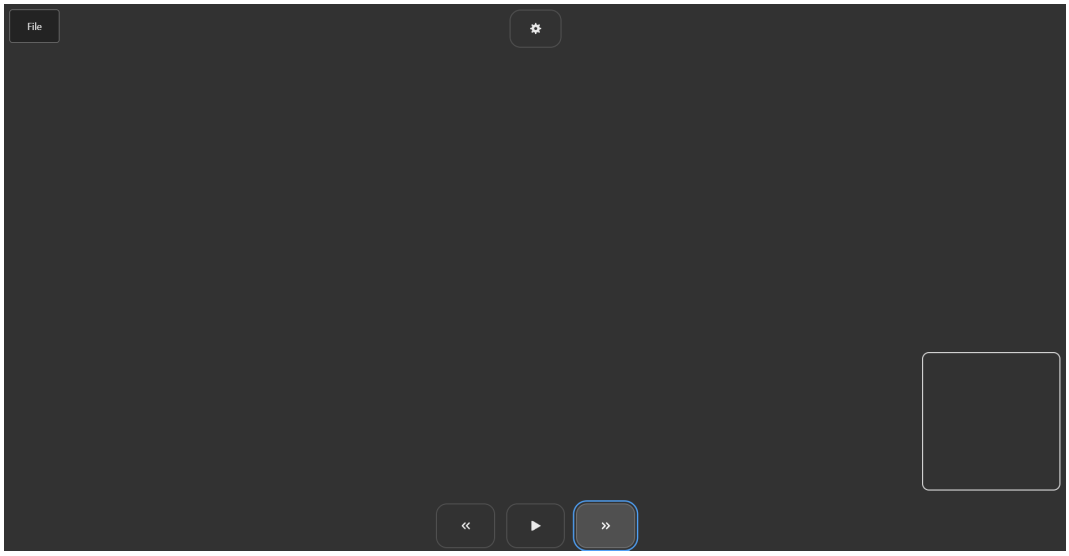


Finally, click on the **Open** option of this popup menu and the application should launch.

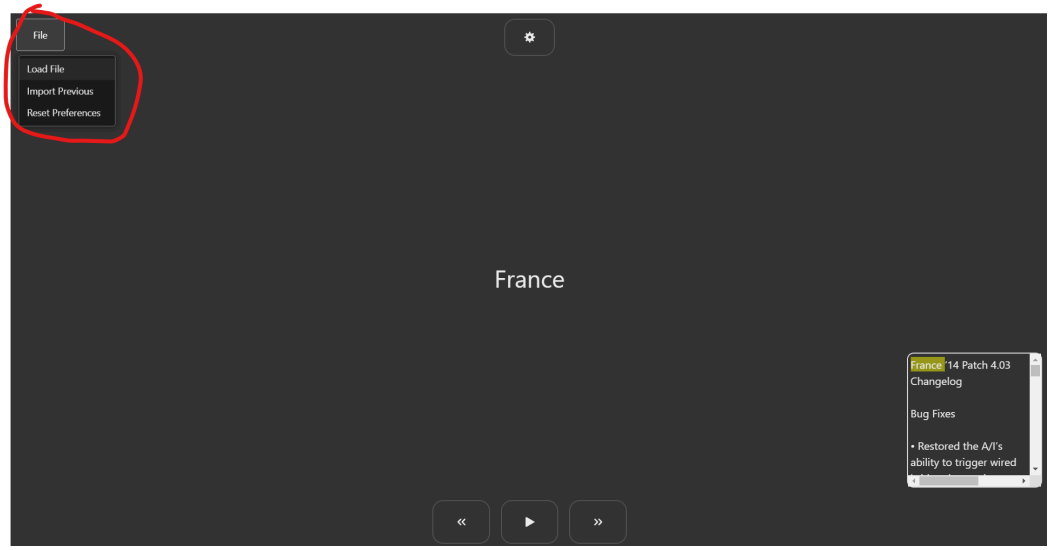
4. Usage

4.1 Basic Usage

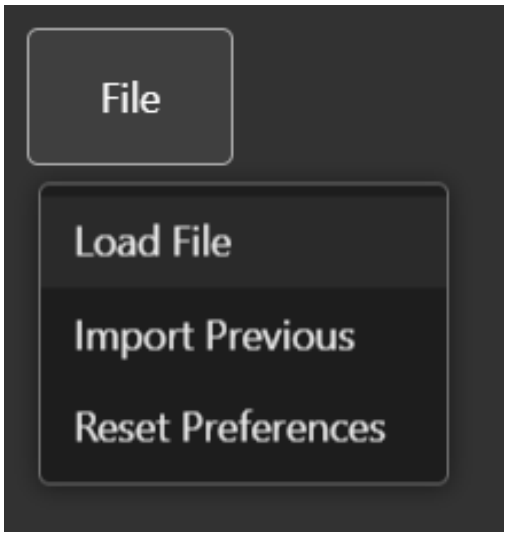
Step 1: Once installed, the main screen appears



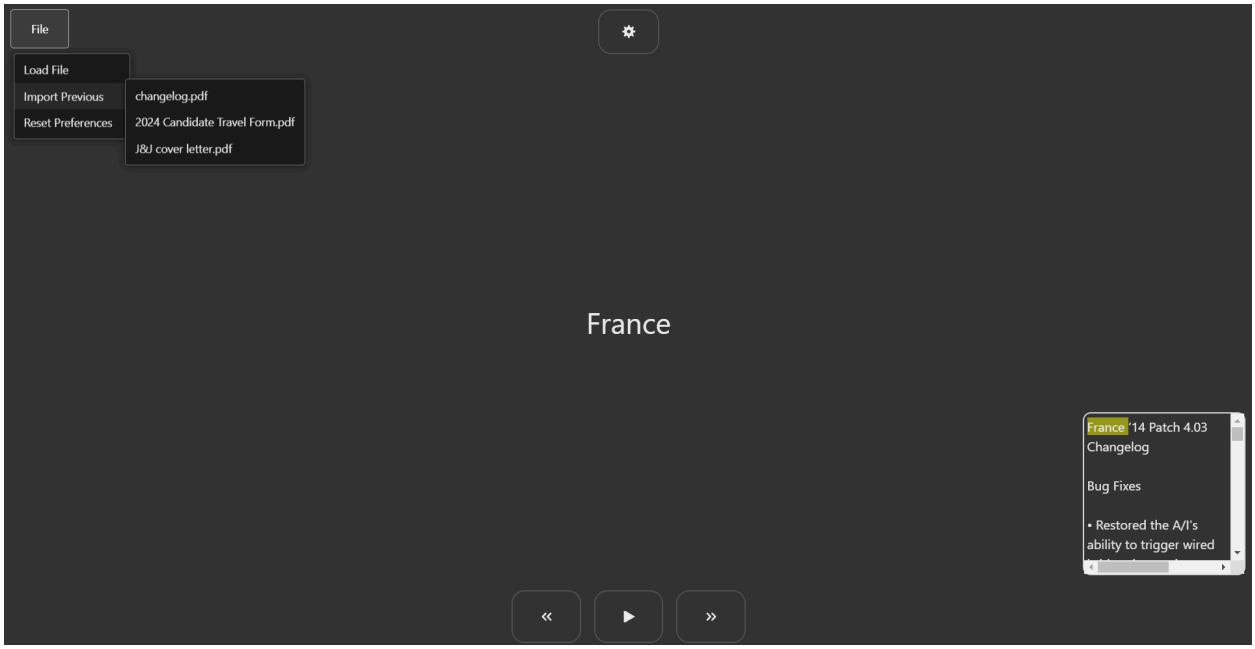
Step 2: Click on **‘File’**, located in the top left corner (see picture below).



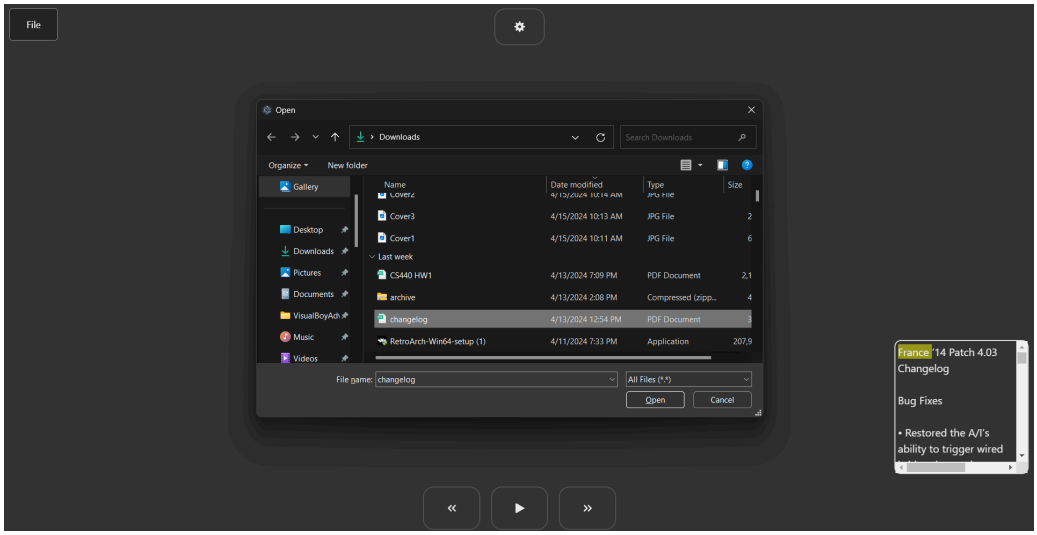
Step 3: Select **‘Load File’**



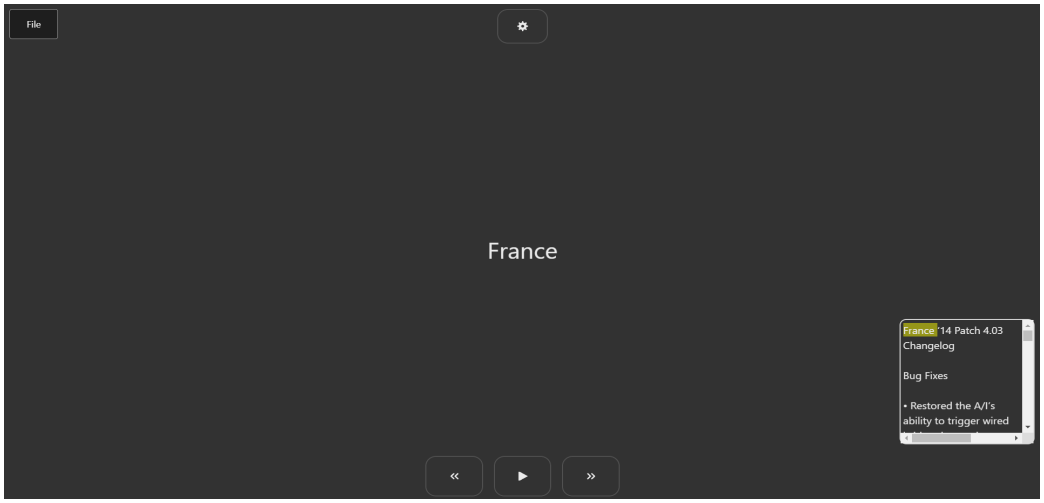
- Select **‘Import Previous’** to reload a previous file
- Select ‘**Reset Preferences**’ to reset all settings options to their default values



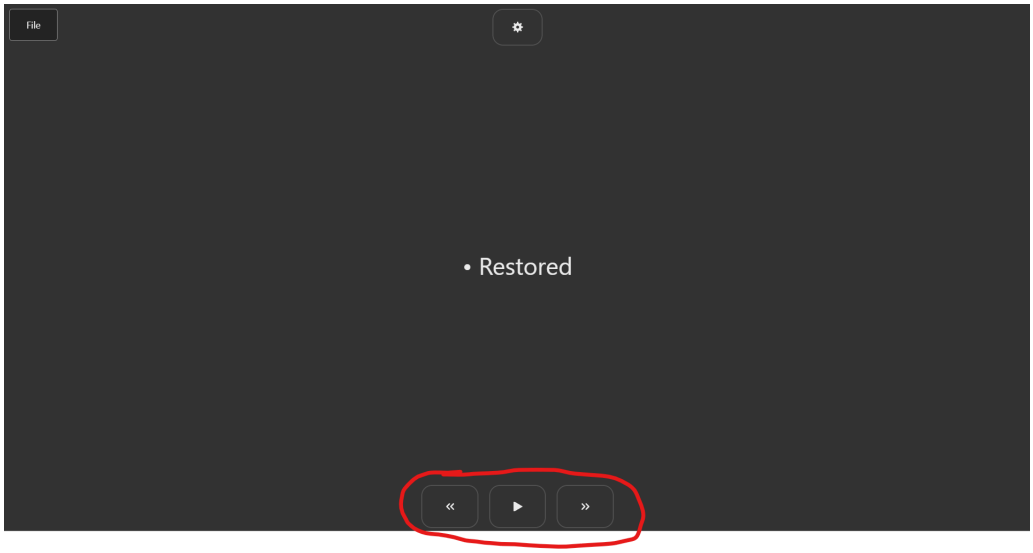
Step 4: Select the desired file type.



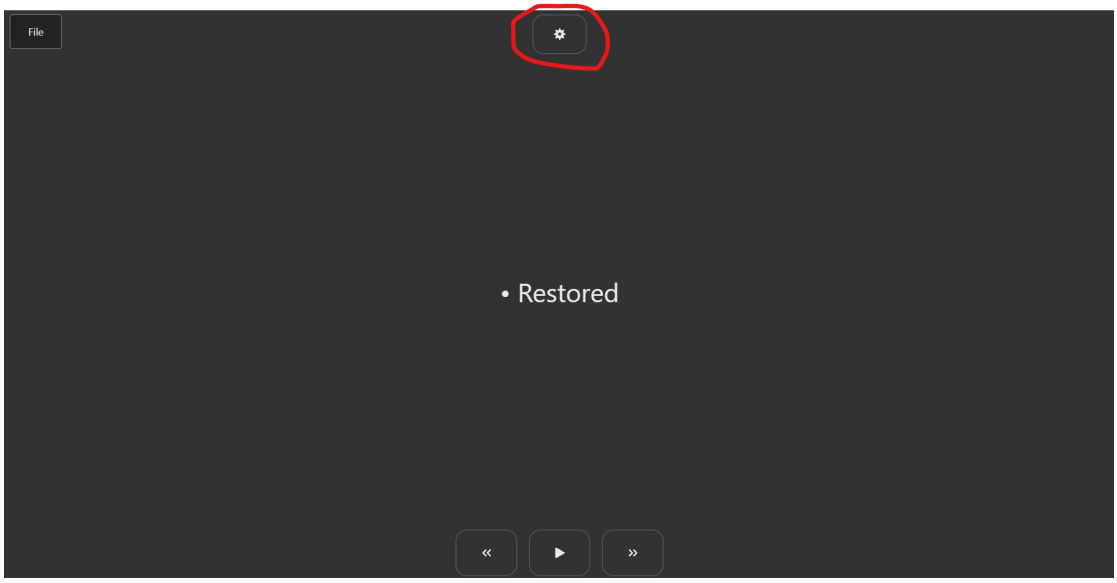
Step 5: The selected file is loaded.



Step 6: The 'Play and Pause' button is located at the bottom.

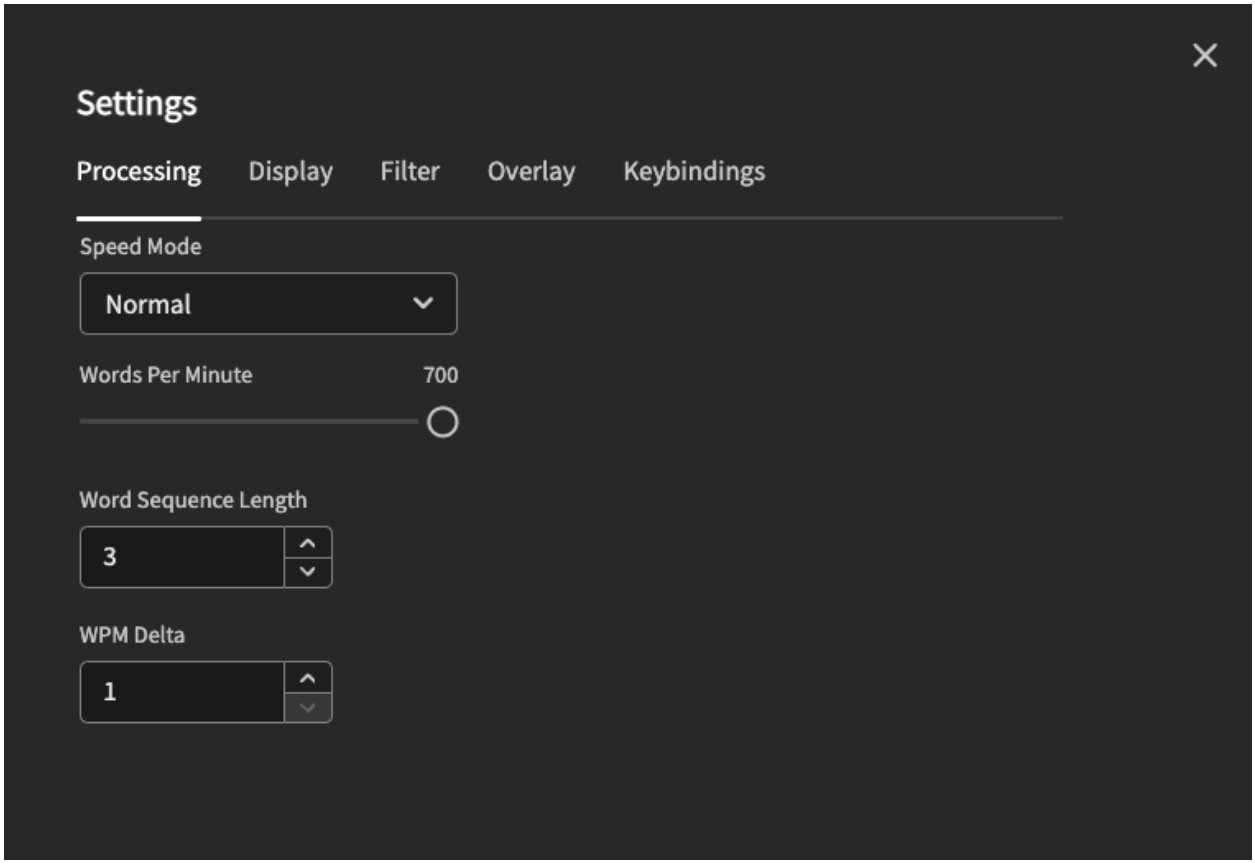


Step 7: Click on the ‘settings’ button (see picture below)



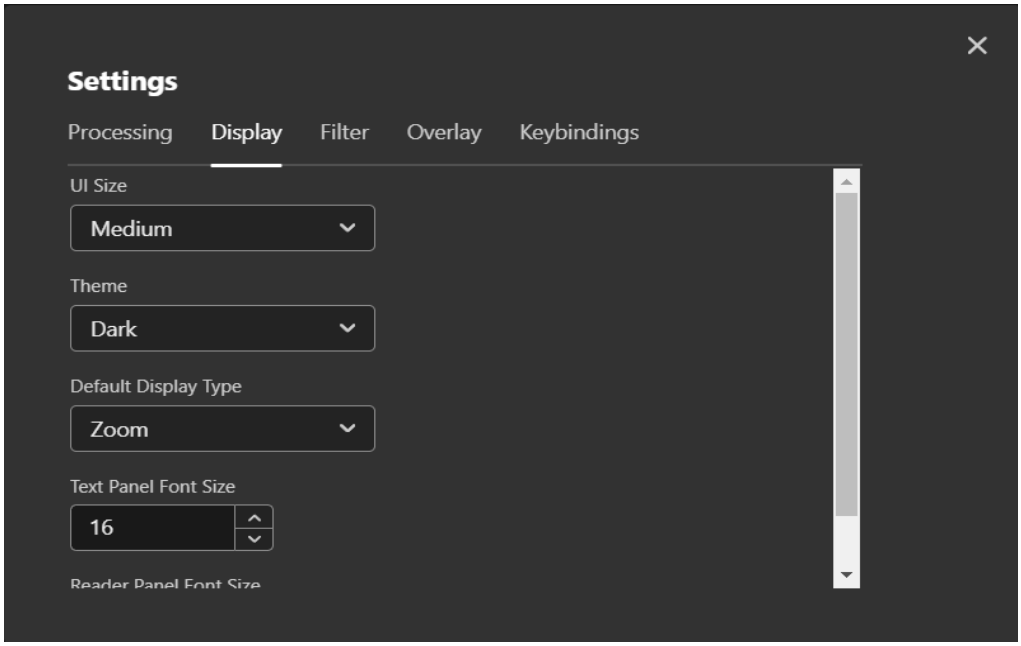
Step 8: Adjust the settings **‘Processing’** options

- **Speed mode**: The speed range to choose from (see **section 2** for more information)
- **Words per minute**: The number of words per minute to display word sequences at
- **Word sequence length**: The numbers of words to display in a sequence
- **WPM delta**: The number of words per minute to increase and decrease by when adjusting the **words per minute** settings value via the keybindings.



Step 9: Adjust the settings **‘Display’** options

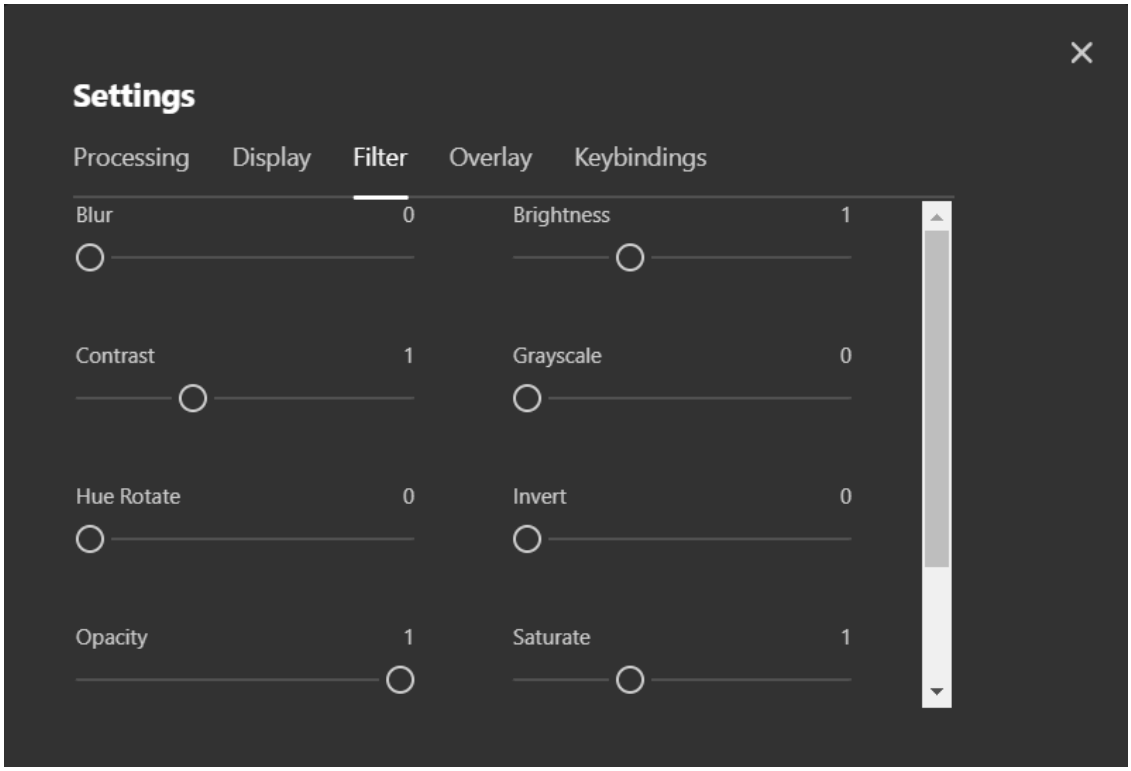
- **UI Size**: The overall application display size for icons, buttons, and menu items
- **Theme**: Themes to style the application with, namely a Dark and Light theme
- **Default Display Type:** The default application panel display type to load when the application is first launched
- **Text Panel Font Size**: Font size for the Text Input Display Panel
- **Reader Panel Font Size**: Font size for the Reader Display Panel



Step 10: Adjust the settings **'Filter'** options

- **Blur**: Adjust the blur level to change the sharpness of the application's visuals. This can reduce eye strain by making text and background elements softer.
- **Brightness**: Adjust the brightness level to control how light or dark the application appears. This can enhance readability in different user environments.
- **Contrast**: Adjust the contrast level to change the distinction between the light and dark elements in the application. Higher contrast can make text stick out more sharply against the application's background.
- **Grayscale**: Adjust the grayscale level to remove color and display the application in various shades of gray. This can help to reduce visual distractions and focus attention on the text.
- **Hue Rotate**: Adjust the hue rotate level to shift the colors of the application. This setting can be used to adjust color perception for users with color vision deficiencies.
- **Invert**: Adjust the invert level to swap the colors of the application with their inverse. This can be helpful for users who find inverted colors easier on their eyes.
- **Opacity**: Adjust the opacity level to control the transparency of the application's elements. Lower opacity can lead to a more subtle, less intrusive visual experience.

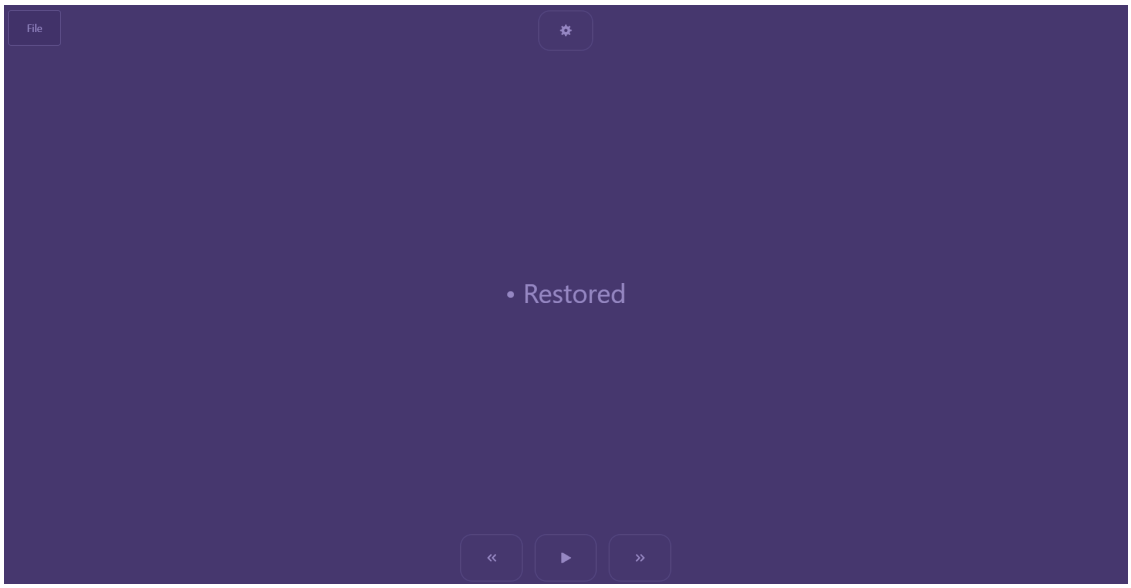
- **Saturate**: Modify the saturation level to control the intensity of colors in the application. Higher saturation makes colors more vivid, while lower saturation can create a more muted, calming effect.



Step 11: Adjust the settings **'Overlay'** options

- Move the sliders to change the overlay color to your preference. This acts as an Irlen filter that overlays the chosen color on top of the application's user interface.

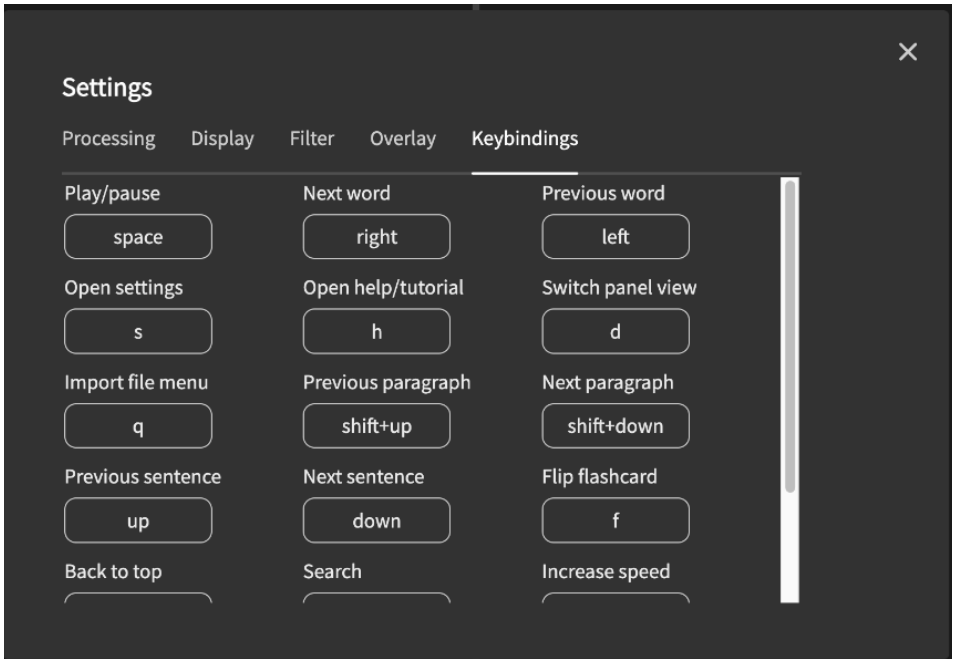
- **Result**



Step 12: Adjust the settings '**Keybindings'** options

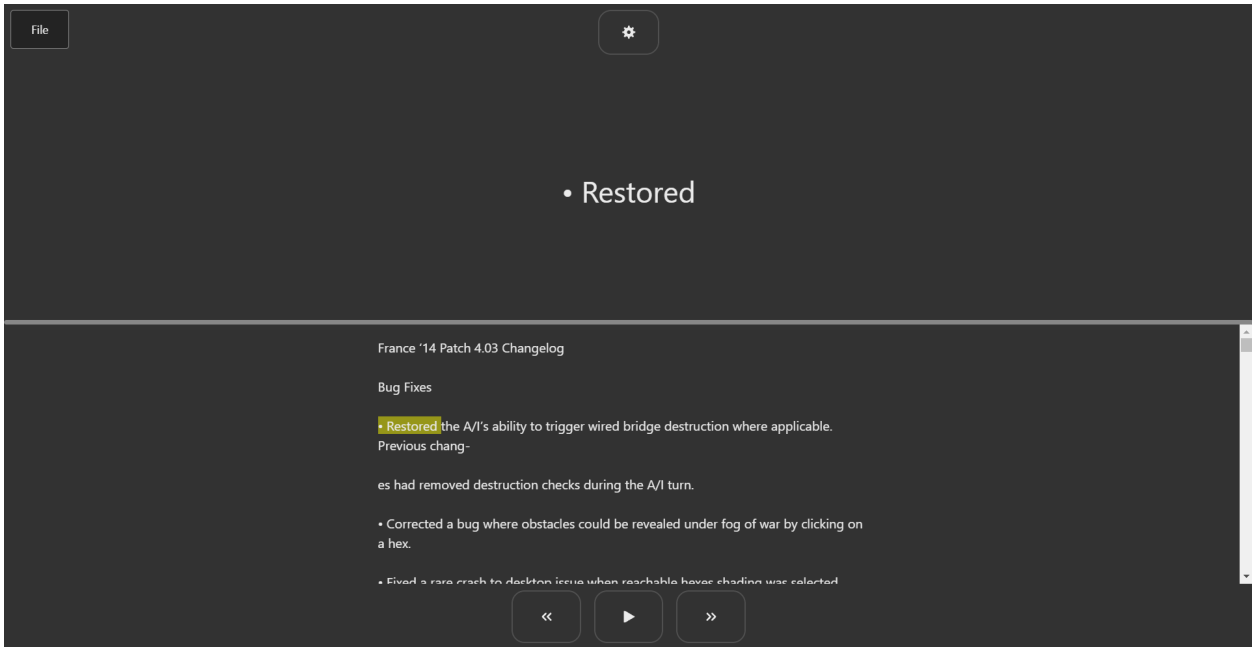
- **Play/pause**: Default key is **Space**
- **Next word**: Default key is **Right Arrow Key**
- **Previous word**: Default key is **Left Arrow Key**
- **Open settings**: Default key is **s**

- **Switch panel view**: Default key is **d**
- **Import file menu**: Default key is **q**
- **Previous paragraph**: Default key is **Shift + Up Arrow Key**
- **Next paragraph**: Default key is **Shift + Down Arrow Key**
- **Previous sentence**: Default key is **Up Arrow Key**
- **Next sentence**: Default key is **Down Arrow Key**
- **Flip flashcard**: Default key is **f**
- **Back to top**: Default key is **Ctrl + Up Arrow Key**
- **Search**: Default key is **Ctrl + f**
- **Increase WPM speed**: Default key is **Shift + Right Arrow Key**
- **Decrease WPM speed**: Default key is **Shift + Left Arrow Key**
- **Open help/tutorial**: Default key is **h**



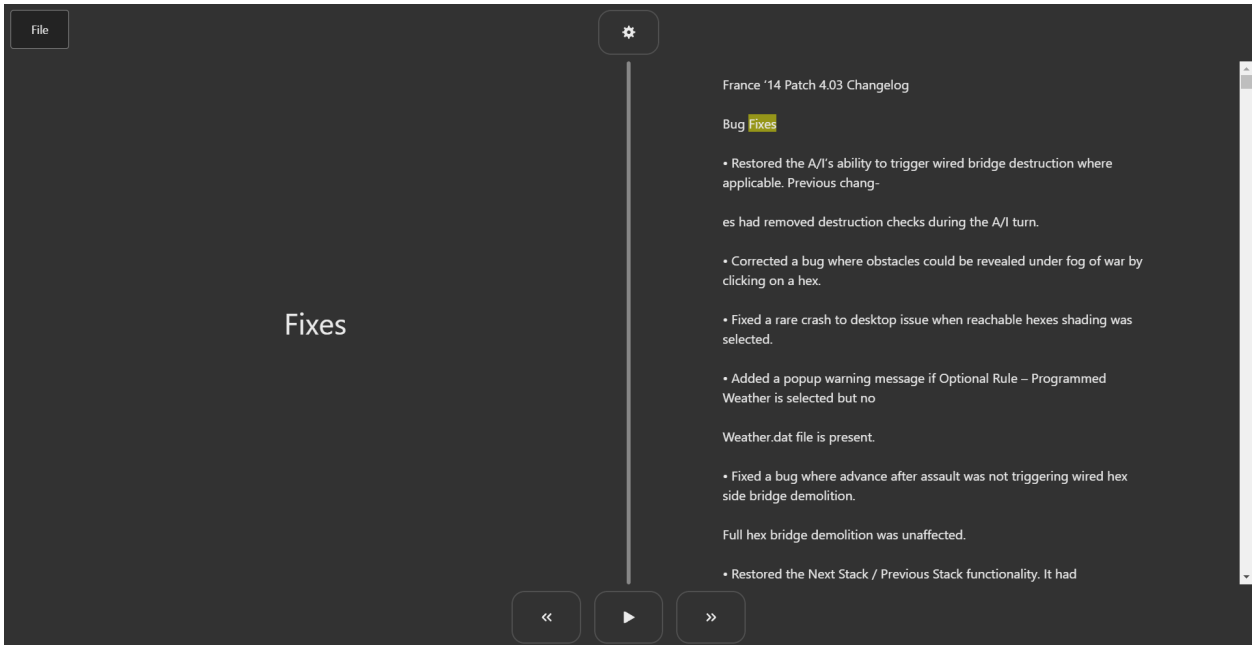
Step 13: Select the panel view according to your preference (using keybindings)

Vertical View

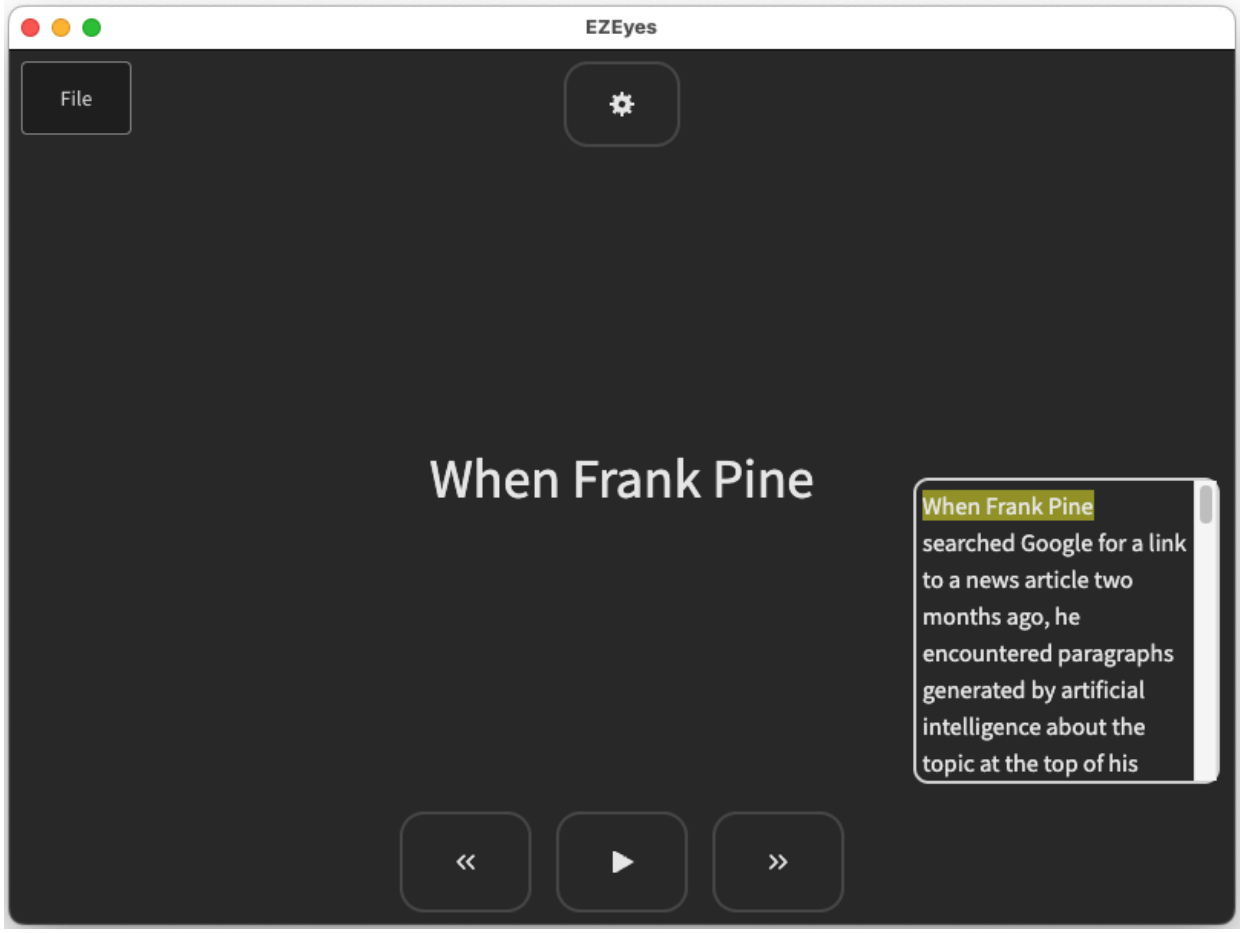


Flashcard View (F Key to flip the flashcard)

Horizontal View



Zoom View



Previous File

- Go to **‘File’** and select **‘Import Previous’** to reload any of the last 3 files that were opened by the application.