Logbook

Date: 24-01-2025

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1. Objectives

- Add a crop function for selecting and cropping regions in the displayed image.
- Continue debugging and refining mouse-related issues in the selection box and viewport.
- Address clipping issues with rectangle borders and ensure mouse interactions are constrained within the window boundaries.
- Incorporate team feedback to improve functionality and handle identified bugs.
- Push the project to GitHub and document its functionality and library usage.

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2. Activities

- **Crop Function Implementation:**
    - Added the ability to crop selected regions of the displayed image.
    - Fixed an issue where undoing and reapplying a crop did not affect the current displayed image:
        - Updated the crop logic to use the current image data as input.
- **Debugging Rectangle Rendering:**
    - Fixed rectangle borders being clipped when exceeding a certain size:
        - Updated the vertex shader to pass texture coordinates (`TexCoord`) and applied transformation matrices.
        - Modified the fragment shader to use texture coordinates for calculating border thickness and transparency.
        - Updated vertex data to include both position and texture coordinates.
        - Adjusted OpenGL buffer and attribute pointers for the new vertex structure.
- **Mouse Interaction Debugging:**
    - Fixed an issue where the mouse could draw beyond the main window region:

        - Updated `handleMouseMove` to constrain mouse positions within window boundaries.
        - Added member variables `m_windowWidth`, `m_windowHeight`, and `m_controlWindowCollapsed` to the `GraphicsView` class.
        - Replaced `std::clamp` with `std::min` and `std::max` for broader compiler compatibility.
        - Defined control panel height to restrict `mouseY` interactions above the control panel area.
        - Ensured rectangle drawing and panning logic adhered to constrained mouse positions.
- **Team Lead Discussion and New Tasks:**
    - Discussed issues with cursor alignment, pan speed, and potential fixes:
        - Investigated coordinate system mismatches causing cursor and point misalignment.
        - Identified scale factor and offset issues affecting pan functionality, causing excessive speed or incorrect centering.
    - New tasks assigned:
        - Pushed the ImGui, Boost.Signals2, and SDL project to GitHub.
        - Wrote a `README.md` file to document project functions, libraries, and usage for easy reference.
        - Adjusted the cursor red point size to `2.5f` for better visibility.
        - Set OpenGL viewport boundaries to ensure proper rendering within defined limits.

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3. Achievements

- Implemented a functional crop feature, resolving issues with undo and reapplication.
- Fixed clipping and rendering issues for large rectangle borders using updated shaders and vertex data.
- Constrained mouse interactions within window boundaries, improving user experience and preventing unintended behavior.
- Documented the project and pushed it to GitHub for team access and collaboration.

- Incorporated team lead feedback to improve debugging strategies and address coordinate system and scaling issues.

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4. Problems & Solutions

1. **Problem:** Cropped image did not update correctly after undoing and reapplying the crop.
    - **Solution:** Updated crop logic to always use the current image data, ensuring accurate results.
2. **Problem:** Rectangle borders were clipped at larger sizes.
    - **Solution:** Updated shaders and vertex data to include texture coordinates and transformation matrices, ensuring proper rendering and transparency.
3. **Problem:** Mouse interactions exceeded window boundaries.
    - **Solution:** Constrained mouse positions in `handleMouseMove` using window dimensions and control panel height, ensuring all interactions remained within the valid area.
4. **Problem:** Cursor misalignment and fast pan functionality.
    - **Solution:** Investigated coordinate system mismatches and adjusted scale factors and offsets to improve alignment and panning behavior.
5. **Problem:** Project lacked GitHub documentation and version control.
    - **Solution:** Pushed the project to GitHub and wrote a comprehensive `README.md` file for functionality and library usage.