

LMathNotes - Hugo-based Mathematical Research Notes Repository

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LMathNotes is a specialized Hugo-based web application designed for organizing, displaying, and navigating mathematical research notes with a focus on LaTeX content. It provides a comprehensive system for managing academic notes with advanced features for confidentiality, history tracking, and content exploration.

1 Features

1.1 Content Organization

- Chronological organization of notes in dated directories
- Specialized handling for LaTeX/TeX files with custom viewer
- Support for both standard research notes and handwritten notebook collections
- Full-text search across all note content, titles, and descriptions

1.2 Navigation & Display

- **Homepage View:** Chronological listing of all notes with expandable descriptions
- **Monthly Notes View:** Notes organized by month with consistent display
- **Handwritten Notebooks View:** Special display for handwritten notebook collections
- **History View:** Chain visualization connecting related notes via prev.txt references
- **TeX Viewer:** Specialized viewer for LaTeX files with syntax highlighting

1.3 Specialized Features

1.3.1 TeX File Handling

- Custom TeX viewer with syntax highlighting via Prism.js
- Line numbers for easy reference
- Soft wrap toggle for improved readability
- Automatic preamble separation with collapsible display
- One-click download option
- File metadata display (size, path)

1.3.2 Search Capabilities

- Real-time searching across all content
- Case-smart search (uppercase for exact matches, lowercase for case-insensitive)
- Visual feedback with dynamic filtering of results
- Keyboard shortcut support (Escape to clear/focus)
- “No results” messaging with clear user feedback

1.3.3 History Tracking

- Visualization of note evolution through connected history chains
- Bidirectional navigation between related notes
- Recursive history display with circular reference detection
- Client-side JavaScript for dynamic history exploration

1.3.4 Confidential Content Protection

- Confidential notes marked via `conf.txt` files
- Content protection with CSS blur effect
- Universal keyboard shortcut (Cmd+B / Ctrl+B) to toggle blur state
- Consistent protection across all views (main, monthly, handwritten, history)
- Selection prevention for blurred content

1.4 Technical Details

- Built on Hugo static site generator
- Custom templates for specialized content types
- Local storage for preserving UI state (open/closed sections)
- Responsive design for all screen sizes
- Custom CSS for distinct styling of different content types

2 File Types & Conventions

The system uses several special files to manage content and relationships:

File	Purpose
<code>description.txt</code>	Defines note title (first line) and description (remaining text)
<code>prev.txt</code>	Lists note IDs that precede the current note in history
<code>conf.txt</code>	Marks a note as confidential (triggering blur effect)
<code>*.tex</code>	LaTeX source files (rendered in custom viewer)
<code>*.pdf</code>	Compiled PDF documents (available for direct viewing/download)

Note ID refers to the directory name of a note (e.g., `2025-05-11-blur-test-1`). These IDs are used in `prev.txt` files to establish relationships between notes and in URL parameters for the history view.

3 Directory Structure

- content/
 - YYYY-MM/
 - YYYY-MM-DD-Note-Title/
 - YYYY-MM-DD-Note-Title.tex (Main TeX file)
 - YYYY-MM-DD-Note-Title.pdf (Compiled PDF)
 - description.txt (Title and description)
 - prev.txt (Historical connections)
 - conf.txt (Optional, for confidential notes)
 - additional files... (Images, bibliographies, etc.)
- Handwritten_Notebooks/
 - YYYY-MM-NN_Notebook_description/
 - description.txt
 - PDF files...
- layouts/
 - Custom templates for different views
- static/
 - css/
 - js/
 - icons/

4 URL Structure

URL Pattern	Purpose
/	Homepage with chronological listing of all notes
/YYYY-MM/	Monthly note listing
/Handwritten_Notebooks/	Handwritten notebooks listing
/history?note=YYYY-MM-DD-Note-Title	History view for specific note
/tex-viewer?path=content/path/to/file.tex	TeX file viewer

5 Installation and Setup Instructions

5.1 Prerequisites

- Install Hugo (extended version required):
 - **macOS:** `brew install hugo`
 - **Windows:** `choco install hugo-extended` or download from Hugo Releases
 - **Linux:** `sudo apt install hugo` or `sudo snap install hugo`

5.2 Local Development

1. Clone the repository:

```
git clone https://github.com/yourusername/notes-public.git
cd notes-public
```

2. Run the development server:

```
hugo server -D
```

3. Access the site in your browser at `http://localhost:1313/`

5.3 Working with LaTeX Files

1. LaTeX files are stored in content directories with the naming pattern `YYYY-MM-DD-Note-Title/`
2. To compile LaTeX files, use the `lmk` command:

```
lmk filename.tex
```

The `lmk` command is a LaTeX Make tool that will:

- Compile the LaTeX document
 - Handle bibliography generation
 - Run multiple passes to resolve references
 - Generate the final PDF in the same directory
3. For more complex documents, you can specify additional options:

```
lmk -bibtex filename.tex # Force bibtex processing
lmk -clean filename.tex  # Remove temporary files after compilation
```

5.4 Production Deployment

1. Build the static site:

```
hugo
```

2. Deploy the `public` directory to your web server:

```
rsync -avz --delete public/ user@your-server:/path/to/public_html/
```

6 Configuration

Configuration is managed through `hugo.toml`:

- Custom media types for TeX files
- Server headers for correct content type handling
- Module mounts for serving content directory as static files
- Theme configuration for Paperesque base theme

7 Usage Guidelines

7.1 Adding New Notes

1. Create a new directory with the naming pattern `YYYY-MM-DD-Note-Title`
2. Add your main TeX file with matching name
3. Create a `description.txt` with title and description
4. (Optional) Add `prev.txt` to link to previous related notes
5. (Optional) Add `conf.txt` if the note contains confidential information

7.2 Navigation

- Use the main page for chronological browsing
- Use search for finding specific content
- Use history view to track research evolution

7.3 Working with Confidential Content

- Add an empty `conf.txt` file to any note directory to mark as confidential
- Use `Cmd+B` (Mac) or `Ctrl+B` (Windows/Linux) to toggle blur effect
- Content remains protected until explicitly revealed by the user

8 License

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