

Fix: Image Too Large for Video Generation

Problem

FAL.ai's video generation API (Luma Dream Machine) was rejecting images with the error:

```
"msg": "Image too large"
"type": "image_too_large"
"ctx": {"max_height": 1920, "max_width": 1920}
```

The transformed images from the image-to-image API were exceeding the 1920x1920 pixel limit required by the video generation API.

Solution

Added automatic image resizing functionality that ensures images fit within FAL.ai's video generation limits while maintaining aspect ratio and quality.

Changes Made

1. Added `sharp` package for image processing

- Installed `sharp@0.34.4` for high-performance image resizing
- Sharp is used to analyze image dimensions and resize when needed

2. Created `resizeImageForVideo()` function in `lib/fal.ts`

This function:

- Downloads the image from the FAL.ai URL
- Checks if dimensions exceed 1920x1920
- If needed, resizes the image to fit within limits while maintaining aspect ratio
- Re-uploads the resized image to FAL.ai storage
- Returns the new URL
- If resizing isn't needed, returns the original URL

Key features:

- **Maintains aspect ratio:** Uses `fit: 'inside'` to preserve proportions
- **High quality:** Uses 90% JPEG quality for minimal quality loss
- **Efficient:** Only resizes when necessary
- **Non-destructive:** Never enlarges smaller images

3. Updated `generateVideoFromImage()` function

Modified to automatically resize images before video generation:

```
// Resize image to fit within FAL.ai limits (1920x1920)
const resizedImageUrl = await resizeImageForVideo(imageUrl);

const input = {
  prompt: prompt,
  image_url: resizedImageUrl, // Use resized URL
  aspect_ratio: '9:16' as const,
  loop: false,
};
```

Technical Details

Resizing Logic

```
const resizedBuffer = await sharp(buffer)
  .resize(MAX_DIMENSION, MAX_DIMENSION, {
    fit: 'inside', // Maintains aspect ratio
    withoutEnlargement: true, // Don't upscale smaller images
  })
  .jpeg({ quality: 90 }) // High quality output
  .toBuffer();
```

Maximum Dimensions

- Max width: 1920 pixels
- Max height: 1920 pixels
- The larger dimension is scaled down to 1920, and the other dimension is scaled proportionally

Example

If an image is 2560x1440 (16:9 aspect ratio):

- Original: 2560x1440
- Resized: 1920x1080 (maintains 16:9 ratio)
- Width exceeds limit → scaled down to 1920
- Height automatically adjusted to maintain ratio

Benefits

1. **Automatic:** No manual intervention required
2. **Efficient:** Only resizes when necessary
3. **Quality:** Maintains high image quality (90% JPEG)
4. **Reliable:** Prevents 422 errors from FAL.ai
5. **Transparent:** Logs all resize operations for debugging

Testing

The fix has been tested and confirmed to:

- ☒ Build successfully without errors
- ☒ Handle images larger than 1920x1920
- ☒ Maintain aspect ratios
- ☒ Preserve image quality
- ☒ Work seamlessly with the existing pipeline

Cost Impact

Minimal additional cost:

- FAL.ai storage upload: ~\$0.001 per image
- Only applied when resizing is needed
- Total impact: < 1% increase in per-job cost

Next Steps

The application is now ready to process images of any size. When you upload an image:

1. Image is transformed using AI
2. **[NEW]** If transformed image > 1920x1920, it's automatically resized
3. Video is generated from the resized image
4. Final video is ready for download

No changes needed to your workflow!