3D Scanner Project Checklist
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- ❏ Commitment
  - ❏ Have a fully functional rotating platform
  - ❏ Successfully capture preprocessed camera frames with button press and display extracted laser line
    - ❏ Modules: *threshold, gaussian_blur, skeletonization, save_frame*
  - ❏ Use a virtual camera to render a view of a 3D point cube from memory
    - ❏ Modules: *virtual_camera, renderer*
    - ❏ Given preset (x,y,z) points, preserve the (x,y), convert z into grayscale pixel luminance and store these in a vram for display
- ❏ Goal
  - ❏ Capture camera frames automatically, without button press
    - ❏ Modules: *simulated_button_press, main_fsm*
  - ❏ Calculate depth of points from laser lines
    - ❏ Modules: *depth_reconstruction*
  - ❏ Render 3D point cloud in real time (while scanning)
    - ❏ Connect transformation and rendering modules to the ZBT output of the processing pipeline
- ❏ Stretch Goals
  - ❏ Control stepper motor with FPGA
    - ❏ Modules: *stepper_controller*
  - ❏ Be able to rotate around the object to view the cloud from different angles
    - ❏ Modules: *virtual_camera* (add input angle)
    - ❏ Respond to user buttons to move the monitor's "virtual camera" and re-render the point cloud for that perspective.
  - ❏ Create a surface for the point cloud so the object appears solid
  - ❏ Gesture control
    - ❏ Modules: *simulated_rotate_button_press*
    - ❏ After point cloud has been rendered, switch mode to gesture control and use camera to read left/right hand swipes as rotations