Physical Product Design:

AI Solutions for Managing Kids' TV Time

original designs by Marian Veteanu

The "Stay Active" solution

original designs by Marian Veteanu

This presentation introduces four editions of the "**Stay Active**" solution, designed to help kids maintain a balance between physical activity and screen time.

1. **"Stay Active" All-in-One Edition**
(standalone. Replaces FireTV, Roku, AppleTV, etc.)

2. **"Stay Active" HDMI edition**
(requires separate streaming box)

3. **"Stay Active" Software Edition**
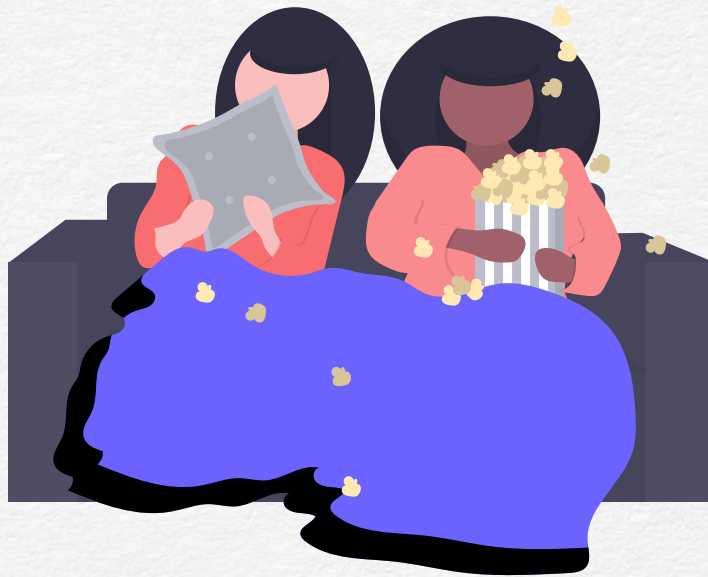(requires separate camera and AI enabled streaming box)

4. **"Stay Active" Smart AI Outlet Edition**
(requires separate camera and streaming box)

The problem

- When unsupervised, kids (even adults ☺) often spend excessive time watching TV.
- Medical studies recommend balancing sedentary activities, such as watching TV, with regular physical activity.

The tech solution

- This presentation introduces a tech solution to address this issue: the "**StayActive**" device, available in three editions.
- The device uses computer vision algorithms to monitor activity and pauses TV programs after a certain period of detected inactivity.
- To resume watching, the user must complete a physical activity challenge.

How is working?

At the core of the "Stay Active" solution in an AI enabled camera that is running machine vision models to detect movement and also to classify body positions.

Example:

- If you stayed on the couch for too long, the movie / show will pause, and device will display "<u>Time for your exercises → You need to do 5 Jumping Jacks OR 10 pushups OR etc.</u>"

- You (or a family member) will have to do the exercise to un-pause the show. The camera will use a CV model to classify body positions to assess if you're doing the exercise correctly!
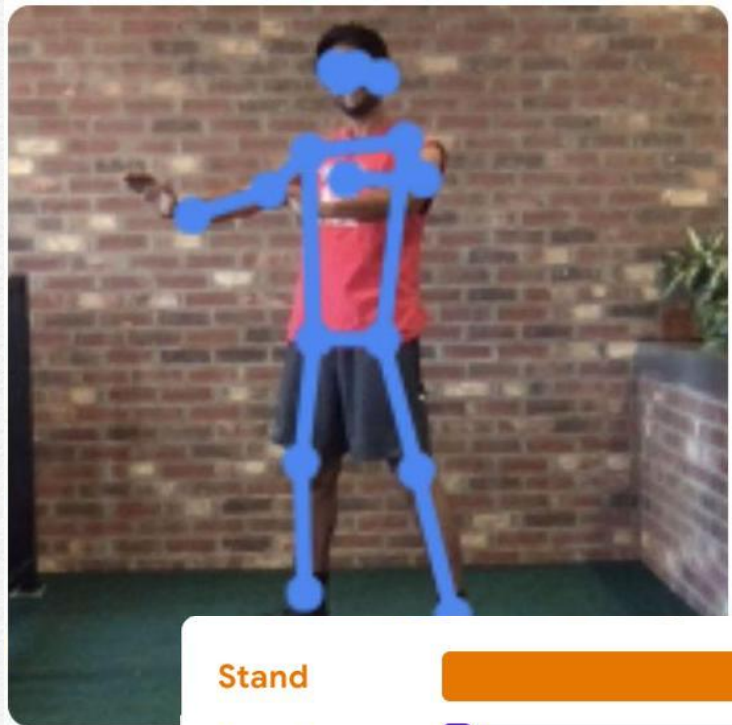

teachablemachine.withgoogle.com

Stand
Squat

"Stay Active" All-in-one Edition

In this edition, the "StayActive" device is a camera-shaped combo unit with an Android operating system. The device is designed to be placed on top of a TV set and includes:

- An AI-enabled camera
- A typical streaming application running on Android (e.g., it can include the Amazon FireTV app)

How it works:

- The user interacts with the streaming box using the included remote. The UX is typical to a traditional streaming device.
- The camera monitors the user's activities and <u>pauses</u> the stream when no activity is detected in a certain amount of time.
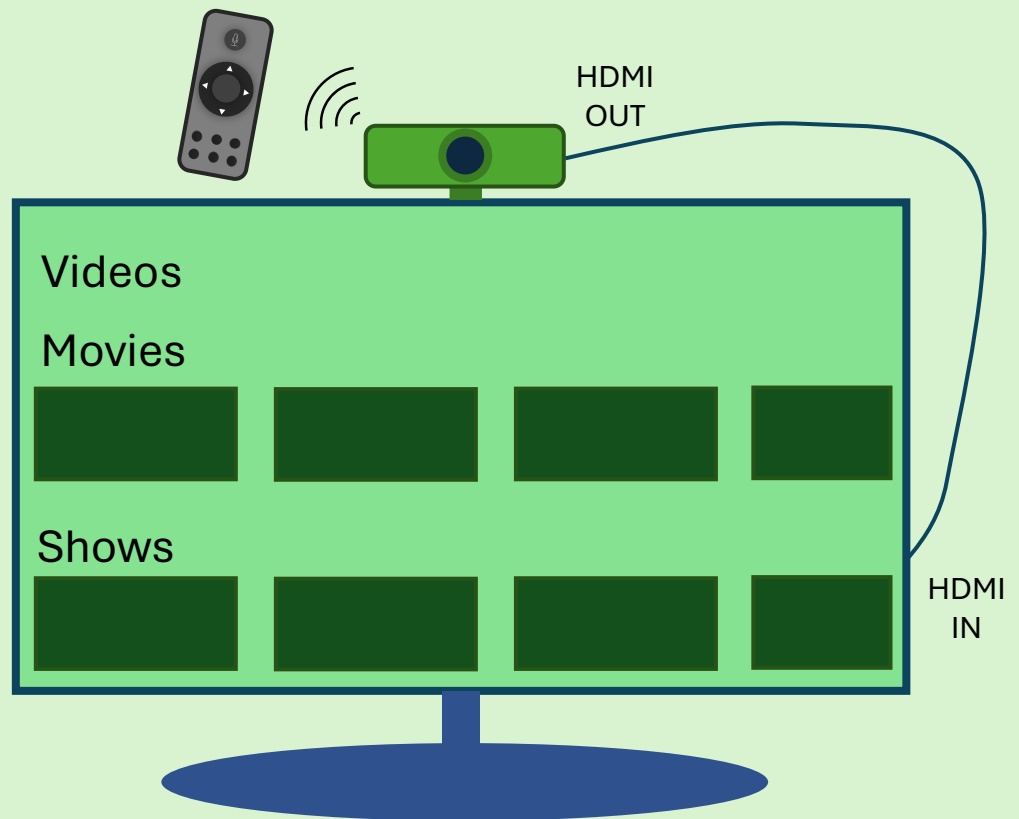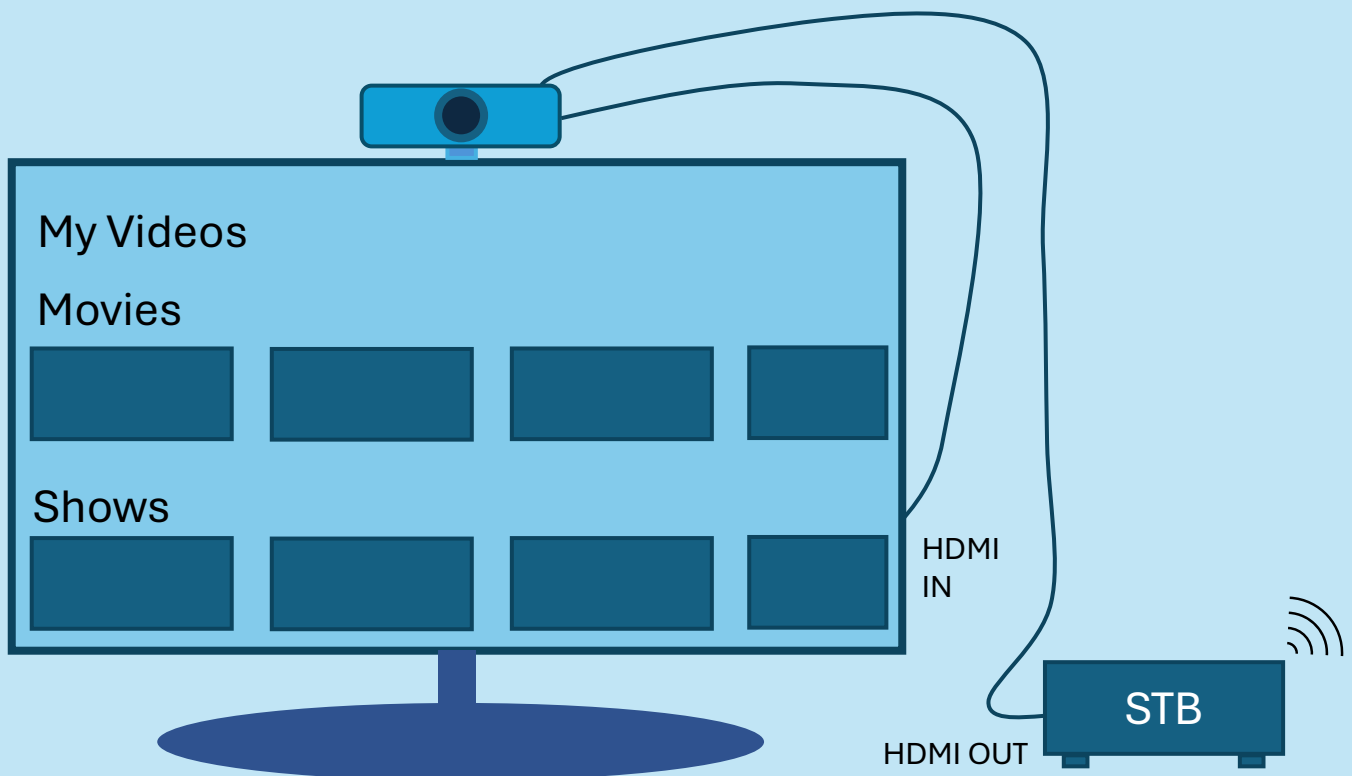
"Stay Active" HDMI Edition

- In this edition, the device is an AI-enabled camera without built-in streaming capabilities.

- The device passes through an HDMI signal from a user supplied media-playing device (e.g., STB, Roku, Apple TV, Fire TV, etc.).

How it works:

- The user streams shows using their preferred streaming device. The streaming box output is tunneled through the "StayActive" device.

- The camera monitors the user's activity, and if no activity is detected, it overlays a message over the video stream prompting the user to complete a physical exercise (e.g. jumping jacks).

"Stay Active" Software Edition

- In this edition, the device is just a software running on an AI enabled STB (e.g. Nvidia Shield, or custom made). An off-the-shelf USB camera is connected to the STB.

- The "Stay Active" software is running the CV model on the USB camera stream to detect inactivity and also completion of assigned exercise.

How it works:

- To play the shows, the "Stay Active" software will interact with the default player app using APIs (if available)
- Alternatively, the "Stay Active" software can have a streaming function

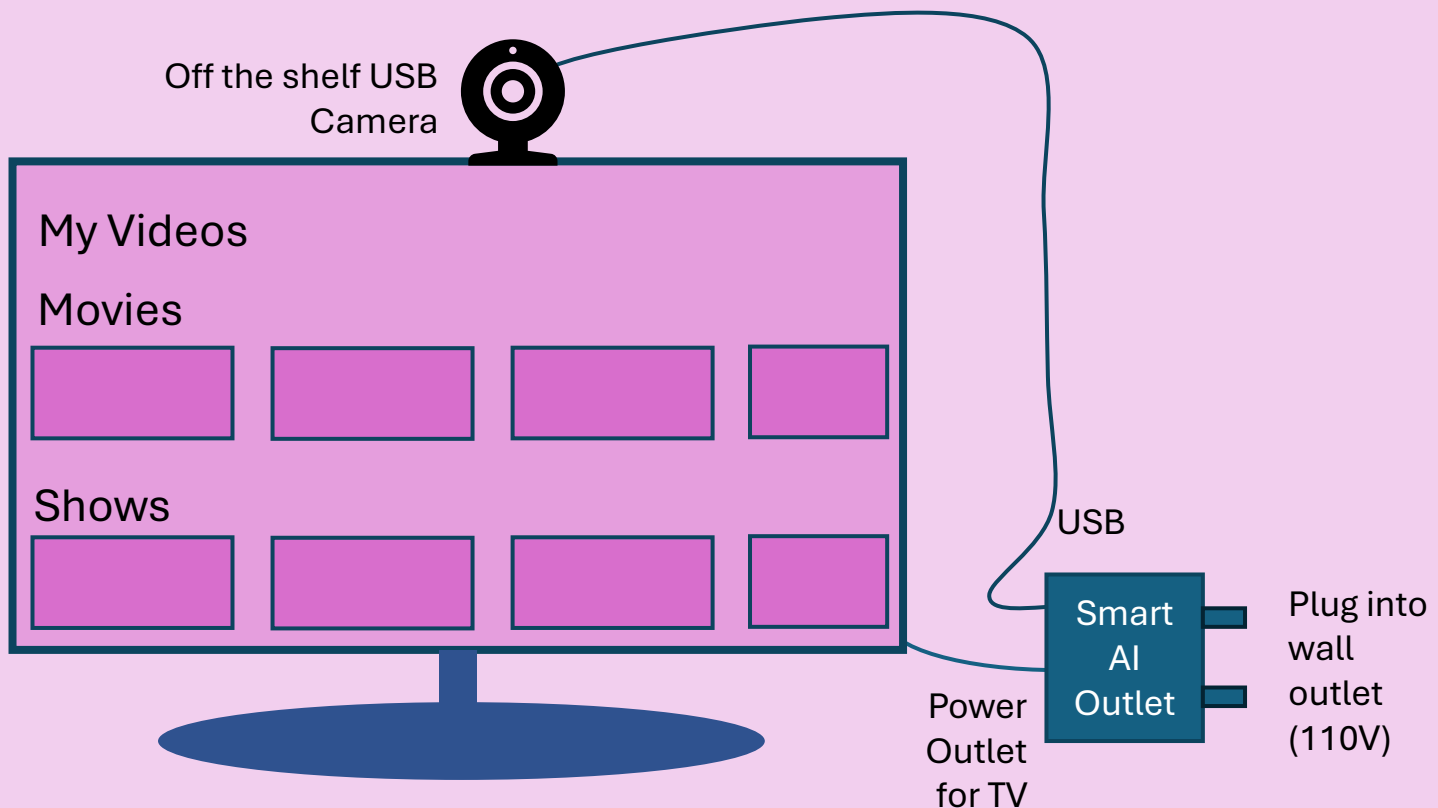Off the shelf USB Camera

My Videos

Movies

Shows

AI STB

USB
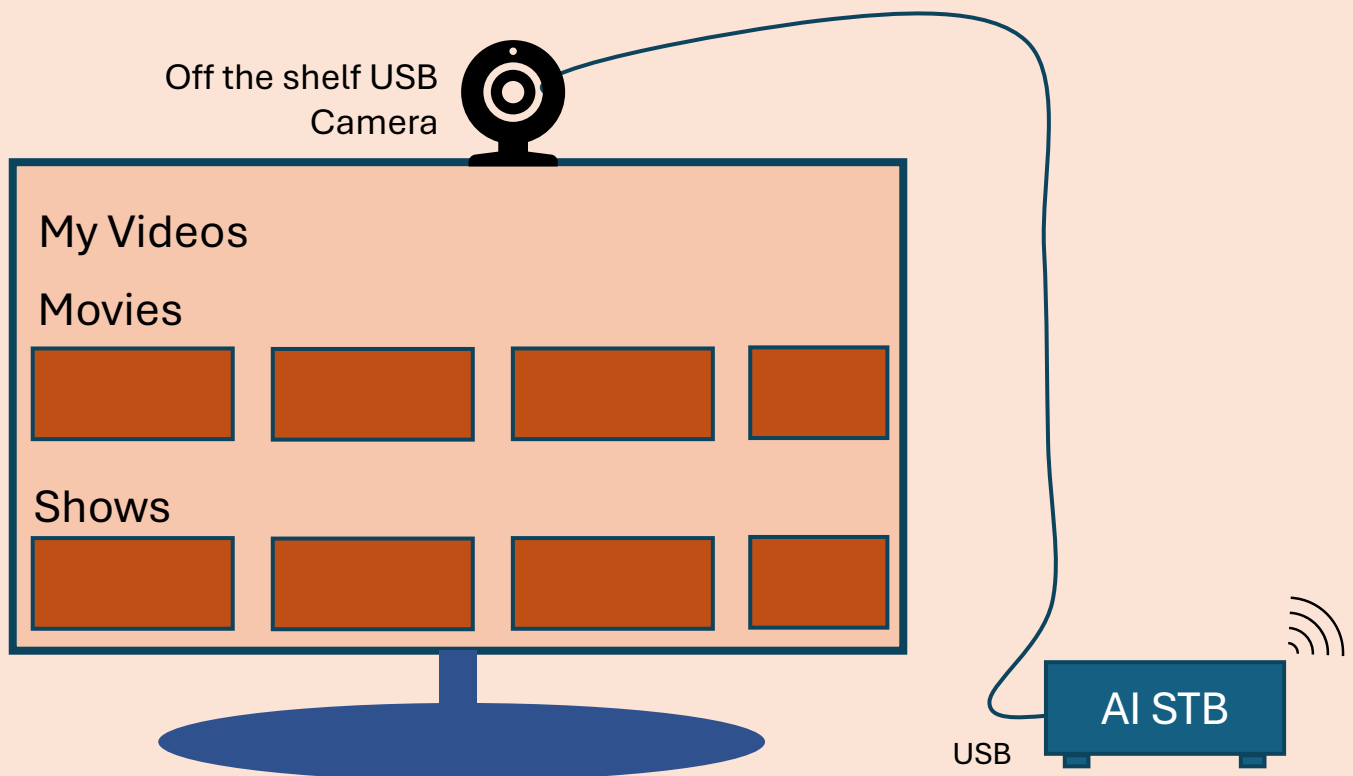
"Stay Active" Smart AI Outlet Edition

In this edition, the device is a Smart AI Outlet with two ports:

- A USB port: to connect an off-the-shelf webcam
- A power port: to connect the controlled device (usually a TV that will be turned off when inactivity is detected for a prolonged period)

How it works:

Since the Smart AI Outlet doesn't have a visual interface, it contains a built-in speaker to prompt the user to do exercises, provide status updates, etc. The Smart AI Outlet runs the computer vision model to detect user inactivity and to monitor the assigned exercises.

Off the shelf USB Camera

My Videos

Movies

Shows

USB

Smart AI Outlet

Plug into wall outlet (110V)

Power Outlet for TV

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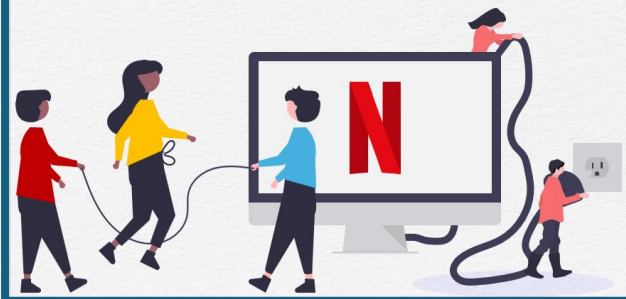
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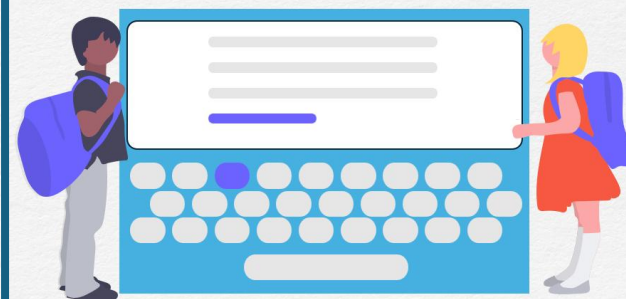
Please make sure to read my other two physical product design papers from the same series.

If you're interested in these designs, or have additional questions, please feel free to contact me.

Physical Product Design:
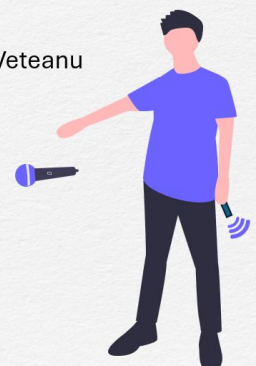
A Dedicated Coding Computer for Young Learners

original design by Marian Veteanu

Physical Product Design:

A Unified Clicker for Stand-Up Webinars

original design by Marian Veteanu

Marian Veteanu
Technology Architect and Product Leader

Excited to join an organization
where I can make an impact!

Let's connect and explore opportunities—
message me!

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