

Resources

- [Technology](#)
 - [Design](#)
 - [Programming](#)
 - [AI](#)
- [Language](#)
 - [Japanese](#)
- [Miscellaneous](#)
 - [Architecture](#)
- [Smart Home](#)

Technology

Technology

Design

- <https://www.degreeless.design/>
- https://docs.google.com/document/d/13GapW8AQWEqzb8IPC_L1DSaeFvqhncBPDSF4ooDoZUA/edit

Technology

Programming

- <https://aosabook.org/en/index.html#500lines>

AI

Helpful jargon

- SOTA model - state of the art model; the most intelligent, advanced, up to date model available in the market (AI companies releases models regularly so you need to keep track)
 - OpenAI GPT o3
 - OpenAI GPT 4.1 (4.5 is available but crazy expensive and only as research preview)
 - Claude Sonnet 3.7
 - Google Gemini 2.5 (Flash and Pro)
 - xAI Grok 3
- Open-source models - not for profit, available to download and run on your computer (needs powerful machine). They are usually 1 generation behind SOTA.
 - DeepSeek R1
 - Meta Llama 4
 - Alibaba Qwen 3
- Multimodal - can take images as input
- Thinking model - able to, in multiple times, self-reflect and check response before responding to user. This reduces hallucination and increases accuracy.
 - DeepSeek R1
 - Google Gemini 2.5 Pro (Flash is non-thinking)
 - OpenAI GPT o3
 - Claude Sonnet 3.7 has a "Thinking" mode
- Function-calling/Tool-calling/MCP - it's just another term for giving an AI model access to tools to expand it's capabilities and use (imagine Homo erectus with fire and other tools)

Chat

1. <https://chatgpt.com/> - free
2. <https://chat.deepseek.com/> - free SOTA
3. <https://www.perplexity.ai/>
4. <https://aistudio.google.com/> - free SOTA
5. <https://gemini.google.com/app>
6. <https://claude.ai/new>

Deep Research

1. <https://chatgpt.com/>
2. <https://www.perplexity.ai/>
3. <https://websets.exa.ai/>
4. <https://gemini.google.com/app>
 1. Flash 2.0 is free
5. <https://claude.ai/new>

Image generation

1. <https://sora.chatgpt.com/>
2. <https://aistudio.google.com/gen-media>

Generic tools

1. <https://manus.im/>

Design

1. <https://www.lovable.ai/home>
2. <https://www.canva.com/ai>
3. <https://gamma.app/>

Prototyping

Take note that multi-modal SOTA models can take a mockup (low or high, doesn't matter) and output code.

1. <https://replit.com/~>
2. <https://lovable.dev/>

3. <https://v0.dev/>
4. <https://bolt.new/>

Language

Language

Japanese

- <https://www.tofugu.com/japanese-learning-resources-database/>

Miscellaneous

Miscellaneous

Architecture

- <https://floorplanner.com/>
- <https://www.magicplan.app/>
- <https://www.rayon.design/>

Smart Home

Smart Home Devices

What is a Smart Relay?

A **relay** is an electrical switch controlled by electricity instead of your finger. A **smart relay** adds WiFi, Zigbee, or Matter so you can control lights and appliances from your phone, voice assistants, or automations.

Can It Make Dumb Lights Smart?

Yes. You install it behind your existing wall switch or inside the light fixture's junction box. Your existing "dumb" bulb stays the same, but the power to it becomes smart. You keep your wall switch — it still works manually. But now you can also say "Hey Google, turn off the living room lights" or set a timer from bed.

Other Devices That Make a Dumb House Smart

Smart Plugs

Plug into your existing wall outlet, then plug any appliance into it. No wiring needed. Makes lamps, fans, coffee makers smart instantly.

Smart Bulbs

Replace existing bulbs. Can dim, change color, or turn RGB. Downside: if someone flips the wall switch off, they lose power and become "dumb" again. Best paired with a smart relay.

Smart Wall Switches

Replace the physical wall switch plate with a WiFi/Zigbee version. Unlike smart relays (hidden), these replace what you see on the wall.

Smart TRVs / Radiator Thermostats

Replace the manual knob on your radiator. Opens/closes hot water automatically to maintain temperature per room. Schedule heating remotely. About half the price of Homematic IP.

Smart Locks

Replace your door lock. Unlock with phone, PIN, fingerprint, or NFC. Auto-lock when you leave.

Motion / Door / Window Sensors

Battery-powered sensors that trigger automations: turn on lights when you enter a room, alert if a door is left open, detect water leaks.

Smart Blinds / Curtains

Motorized controllers for existing blinds or curtains. Schedule them to close during peak sun and open at sunset.

IR Blasters

Device that sends infrared signals like a TV remote. Makes your "dumb" TV, AC, or fan controllable from your phone or voice.

Smart Garage Controllers

Wires into your existing garage door motor. Open/close/check status from your phone.

Smart Smoke / CO Detectors

Send phone alerts, tell you which room triggered, and self-test.

Smart Water Valve Shutoffs

Clamps onto your main water pipe. Automatically shuts off water if a leak sensor detects water.

Energy Monitors

Track exactly how much power your AC, fridge, or gaming PC uses. Essential where electricity is expensive.

Understanding Smart Relay Models

Both Shelly and SONOFF have dozens of models. They differ across five main dimensions:

1. Protocol: WiFi vs Zigbee vs Matter

WiFi	No hub needed. Works with any router.	Uses WiFi bandwidth; can be laggy if router is far. Best for 1-5 relays.
Zigbee	Fast, local, low power. Creates mesh network.	Needs a Zigbee hub (Home Assistant SkyConnect, SONOFF ZBBridge, Echo 4th gen). Best for 10+ devices.
Matter	New universal standard. Works with Apple, Google, Home Assistant.	Still new. Good for future-proofing.
Bluetooth	Very cheap; no hub.	Short range; slow; unreliable. Not recommended for relays.

2. Size: Mini vs Standard

Mini	~40mm × 40mm × 20mm	Fits inside a standard wall box behind the switch. Essential for Philippines where wall boxes are small.
Standard	~90mm × 40mm × 25mm	Needs more space; usually goes inside the ceiling junction box.

3. Amperage: 10A vs 16A

10A	LED lights, ceiling fans, exhaust fans	Not for aircons or water heaters
16A	Most lights, outlets, small appliances	Safe for window-type ACs (5-10A draw)
25A+	Water heaters, pumps, main circuits	Heavy-duty loads

4. Channels: 1-Gang vs 2-Gang vs 4-Gang

1-gang	Controls 1 light circuit	Simple wiring
2-gang	Controls 2 circuits independently	For 2 lights in one switch box
4-gang	Controls 4 circuits	Complex; usually ceiling box install

5. Special Features

Power Monitoring	Measures real-time wattage and kWh. Essential where electricity is expensive.
Dimming	Controls brightness of compatible dimmable LEDs.
Dry Contact	Switches low-voltage signals (doorbells, gate motors) without passing mains power.
Roller Shutter Mode	Controls up/down motors for blinds, curtains, projector screens.

Quick Reference: "If You Need X, Buy Y"

Make 1 light smart, WiFi, no frills	SONOFF MINIR4 or Shelly 1 Mini
Make 1 light smart, Zigbee, reliable	SONOFF ZBMINIR2 or Shelly Plus 1 (ZB)
Control 2 lights from 1 switch box	SONOFF MINI DUO or Shelly 2.5
Monitor how much power an outlet uses	Shelly 1PM or SONOFF POWR316
Dimmable LED lights	SONOFF MINI-D or Shelly Dimmer 2
Control roller shutters / curtains	Shelly 2.5 or SONOFF DUALR3
Trigger a gate motor (dry contact)	Shelly 1 or Shelly 1 Mini
Heavy load (water heater, pump)	Shelly Plus 1 (16A) or SONOFF POW Elite
Future-proof, works with everything	SONOFF MINIR4M (Matter)

Philippines-Specific Smart Home Setup

Given small wall boxes, hot weather, expensive electricity, and Type A/B plugs:

Priority 1: Air Conditioner Control

Most Filipino homes use split-type or window-type ACs with IR remotes.

- **Smart IR Blaster** (Broadlink RM4 Mini, Tuya IR Hub): Control AC from your phone, schedule cooling before you arrive.
- **Smart AC Controllers** (Sensibo Air, Tado): More advanced, with built-in temperature/humidity sensors and automatic temperature maintenance.

Priority 2: Fan / Appliance Automation

Use **Type A/B smart plugs** for electric fans, air coolers, and dehumidifiers. No wiring needed.

Important: Most cheap smart plugs on AliExpress are Type F (Schuko). Make sure you buy **Type A/B** smart plugs, or use a safe adapter.

Priority 3: Lighting

Smart relays behind switches for outdoor lights, gate lights, security lights. Pair with motion sensors.

Priority 4: Sensors for Tropical Living

Motion Sensor	Auto-lights for CR, kitchen, hallways
Door/Window Sensor	Alerts if gates/doors left open; trigger AC off if window opens
Water Leak Sensor	Essential during typhoon season — place under sinks, near drains
Humidity Sensor	Trigger exhaust fans or dehumidifiers when humidity spikes
Temperature Sensor	Trigger fans or AC when room gets too hot

Priority 5: Security and Gate

- **IP Camera** facing gate/street
- **Smart doorbell**
- **Smart relay for gate motor** — open/close automatic gate from phone

Priority 6: Energy Monitoring

Electricity in the Philippines is expensive (Meralco rates among highest in Asia).

- **Smart plugs with energy monitoring** — see exactly how much your AC or gaming PC costs per month
- **Whole-home energy monitors** (TONGOU 63A breaker) — track total household usage in real time

Priority 7: Brownout / Power Outage

- Use relays with **power-loss memory** — resume last state when power returns
- Add a **UPS** to your router + smart home hub so automations still work during brief brownouts
- Smart sensors can send phone alerts when power goes out (if WiFi is on battery backup)

Typical "Pinoy Starter" Smart Home Kit

Device	Purpose	Est. Price (AliExpress)
Broadlink RM4 Mini or Tuya IR Blaster	Control AC, TV, fan remotely	~400 - 800 PHP
Type A Smart Plugs x3	Fan, air cooler, lamp	~300 - 600 PHP each
Smart Relay x2	Gate light, outdoor security light	~400 - 700 PHP each
Door/Window Sensors x2	Gate + main door alerts	~200 - 400 PHP each
Motion Sensor x2	CR + kitchen auto-lights	~200 - 400 PHP each
Water Leak Sensor x2	Under kitchen sink + near drain	~200 - 400 PHP each
Temperature/Humidity Sensor	Trigger fans/AC	~200 - 400 PHP
IP Camera x1	Gate/front door	~600 - 1,500 PHP

Total starter budget: roughly 3,000 - 6,000 PHP (about 50 - 100 EUR)

AliExpress Cheaper Alternatives to Shelly / Homematic IP

These were found live on AliExpress with good reviews and tens of thousands of sales:

Alternatives to Shelly (Smart Relays)

Product	Type	Approx. Price	Rating	Sold
SONOFF ZBMINIR2 Extreme Zigbee	Zigbee relay	~13 - 26 EUR	4.8	2,100+
SONOFF MINIR4M Matter	Matter/WiFi relay	~18 - 35 EUR	4.8	1,000+
SONOFF MINI-D WiFi	WiFi relay	~12 - 23 EUR	4.9	1,100+
GIRIER Tuya ZigBee 3.0 10A relay	Zigbee 1-4ch module	~7 - 13 EUR	4.8	34,000+
Aubess Zigbee switch	Zigbee wall switch / relay	~6 EUR	4.7	3,400+
TONGOU TO-Q-SY1 WiFi 63A	WiFi main breaker / switch	~13 - 23 EUR	4.8	13,600+

Alternatives to Homematic IP (Radiator Thermostats / TRVs)

Product	Protocol	Approx. Price	Rating	Sold
MOES ZigBee TRV	Zigbee 3.0	~23 - 31 EUR	4.6 - 4.7	1,800 - 2,600+
MOES Tuya ZigBee TRV (packs)	Zigbee 3.0	~24 - 31 EUR	4.6	700+
Generic Tuya ZigBee TRV	Zigbee 3.0	~24 EUR	4.5	80+
Qiumi HY368 Tuya TRV	Tuya / Zigbee	~14 EUR	4.0	24+

Bottom line: Basic Zigbee or WiFi relays cost roughly **50-70% less** than comparable Shelly modules. MOES TRVs are about **half the price** of Homematic IP with strong reviews.